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ABSTRACT

This proceedings of the annual forum of the Federal Library and Information Center committee (FLICC) of the Library of Congress begins with summaries of introductory and special remarks, two keynote addresses, 15 presentations, and the comments they generated. The publication also contains the text of the keynote addresses: "Establishing a System of State-Based Electronic Libraries" (Robert Kerrey) and "The Electronic Information Era: A Vision of the Future" (Robert C. Heterick, Jr.) and the following papers: 1) "Competition and Cost Concerns: Information as a Commodity--Fee vs. Free" (Barbara Markuson); (2) "User Needs: Pricing of Federal Electronic Information Products and Services" (James P. Love); (3) "Information Policy: The State's Role" (Richard Varn); (4) "Intellectual Property: Introduction, Overview, and User Needs" (William W. Ellis); (5) "Intellectual Property: The Government Perspective--Government's Role in Striking a Balance in the Public Interest" (Dorothy Schrader); (6) "Information Initiatives: Electronic Libraries of the Future--Implications for Federal Librarians" (Robert Wedgeworth); (7) "Emerging Roles and Responsibilities for the Federal Library and Information Professional in the Electronic Age" (S. Michael Malinconico); and (8) "Government Information Policy and Administration in the Next Century: Is Nothing Sacred?" (Harold Relyea). (KRN)

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Proceedings of the Annual FLICC Forum on Federal Information Policies

1993 Forum (10th)

Government's Role in the Electronic Era: User Needs and Government's Response

March 25, 1993

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About FLICC

The Federal Library and Information Center Committee (FLICC) was created in 1965 as the Federal Library Committee by the Library of Congress and the Bureau of the Budget (now the Office of Management and Budget), renamed FLICC in 1984 to reflect its growing information center constituency, and granted its first comprehensive Bylaws in 1991 by the Library of Congress to formalize its procedures and establish an updated organizational structure.

In the course of these changes, FLICC has established itself as the federal interagency advisory committee that provides leadership and assistance to the nation's federal libraries and information centers, which number approximately 2,500 institutions stretching from coast to coast, extending to Alaska and Hawaii, and reaching Europe and other parts of the globe.

FLICC's purpose is to achieve better utilization of federal library and information center resources and facilities through professional development, promotion of services, and coordination of available resources. FLICC is also responsible for making recommendations on federal library and information policies, programs, and procedures to federal agencies and to others concerned with libraries and information centers.

Through FEDLINK (Federal Library and Information Network), a cooperative program established in 1978, FLICC also offers any federal agency cost-effective access to information and operations support services from commercial sources.

To accomplish these objectives, FLICC draws on the resources of the federal government libraries and information centers. Under the 1991 FLICC Bylaws that broadened membership, FLICC is composed of 57 federal agency members. The 32 members designated as permanent members include the directors of the three national libraries—the Library of Congress, the National Library of Medicine, and the National Agricultural Library—and representatives of the cabinet-level executive departments and other federal agencies with major library programs. Other FLICC members include 15 rotating representatives directly elected by FEDLINK members, nine rotating members elected by the permanent FLICC members, and the chair of the FEDLINK's Advisory Council.

Volunteers from federal libraries and information centers support wide ranging FLICC programs through FLICC Working Groups which focus on federal information policy issues, education, preservation, library binding, personnel, other issues, and cooperative endeavors.

For further information about FLICC services and programs, write to FLICC, Library of Congress, Washington, DC 20540-5100; telephone FLICC (202) 707-4800; or fax (202) 707-4818. FLICC also maintains the FEDLINK Fiscal Operations Hotline (202) 707-4900 and the ALIX Bulletin Board (202) 707-4888.

Mary Berghaus Levering
FLICC Executive Director

12/92

The 1993 FLICC Forum on
Federal Information Policies (10th)
March 25, 1993

Government's Role in the Electronic Era: User Needs and Government's Response

Summaries of Proceedings
prepared by Carolyn Mulford

Federal Library and Information Center Committee
Library of Congress, Washington, DC 1993

Previous FLICC Forums

The First Annual FLICC Forum on Federal Information Policies:
Emerging Issues on Managing Information Resources, February 15, 1984

The Second Annual FLICC Forum on Federal Information Policies:
The International Flow of Scientific and Technical Information, February 27, 1985

The Third Annual FLICC Forum on Federal Information Policies:
Their Implementation on Implications for Information Access, February 12, 1986

The Fourth Annual FLICC Forum on Federal Information Policies:
Views of a Concerned Community, February 25, 1987

The Fifth Annual FLICC Forum on Federal Information Policies:
The Impact on Competitiveness, March 7, 1988

The Sixth Annual FLICC Forum on Federal Information Policies:
The Congressional Initiative, March 22, 1989

The Seventh Annual FLICC Forum on Federal Information Policies:
Access is the Key, March 20, 1990

The Eighth Annual FLICC Forum on Federal Information Policies:
Building Information Superhighways: Supercomputing Networks and Libraries, February 15, 1991

The Ninth Annual FLICC Forum on Federal Information Policies:
The Future of Government Technology: Money, Management, and Technology, March 17, 1992

Acknowledgments

The annual FLICC Forums on Federal Information Policies are arranged under the auspices of the FLICC Education Working Group which was chaired in 1993 by Donald Fork, Department of Education. Each year volunteers from the FLICC Education Working Group serve with the Ad Hoc FLICC Forum Working Group which is composed of information experts. The Ad Hoc Working Group selects the Forum topic, identifies speakers, and helps to prepare the Forum program. FLICC wishes to express its appreciation to the FLICC Education Working Group, particularly to working group members Donald Fork, and Kay Melvin, Patent and Trademark Office, and to Library of Congress staff members Judith Farley and Stephen Kelley of the Office of the Librarian, and to Jane Bortnick Griffith, Lynne McCay, and Harold Relyea of the Congressional Research Services.

Summaries Written By: Carolyn Mulford

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Tenth Annual FLICC Forum on Federal Information Policies
March 25, 1993

Government's Role in the Electronic Era
User Needs and Government's Response

FORUM CALL

The increasing prevalence of information in electronic formats adds urgency to the discussion about America's information policies for the years ahead. The promise for scholarship, business, and citizenship carried out in an electronic community, where vast amounts of information are transmitted and analyzed instantly, is enticing. Moving into an electronic era, however, intensifies challenges regarding information completeness, relevance, and permanence already well-known to librarians and other information professionals. New and emerging information technologies make re-examination of the rights and responsibilities of information users and providers necessary.

Critical decisions regarding the role of government on this information frontier need to be made. Government exerts significant influence through the formulation and administration of public policy and as a major consumer and producer of information. The direction government takes should be determined based on an understanding of the needs of society, appreciation of the value of information, and analysis of developments in electronic information technology. Users and producers of information and information professionals must help government leaders answer key questions. How shall availability of the information necessary for a democratic society in a modern world be assured? How can the growth of the information industry be fostered and how shall the rights of creative individuals be safeguarded? How shall federal information professionals protect the taxpayer's investment in government by acquiring and using information resources efficiently and wisely?

The 1993 Annual FLICC Forum will present speakers from the private sector and government who will provide a basis for answering these questions. They will address user needs and describe current federal activity in four significant areas of information policy:

- information access and dissemination through government information gateways;
- competition and cost concerns surrounding information as a commodity;
- intellectual property - information ownership in the electronic age; and
- information initiatives for libraries of the future.

Since its creation in 1965, the Federal Library and Information Center Committee (FLICC) has sought to provide leadership in addressing a variety of information policy issues affecting both the federal government and the American public, and also to promote efficiency and effectiveness in federal library and information center operations. As part of these endeavors, FLICC sponsors an annual Forum on federal information policies. This FLICC Forum brings together information professionals and other concerned individuals from government, business, the research community, and the general public to report on developments and exchange ideas about national policies and strategies for information access and dissemination.

Federal Library and Information Center Committee

TENTH ANNUAL FORUM ON FEDERAL INFORMATION POLICIES

Government's Role in the Electronic Era: User Needs and Government's Response

Thursday, March 25, 1993
Mumford Room, 6th floor, James Madison Memorial Building
Library of Congress, First Street and Independence Avenue, SE, Washington, DC

AGENDA

8:30 a.m. *Registration and Coffee*

8:45 a.m. **Welcome, Introduction and Program Overview**
Mary Berghaus Levering, FLICC Executive Director
Donald C. Curran, Associate Librarian for Constituent Services, Library of Congress
James H. Billington, The Librarian of Congress

9:00 a.m. **Keynote: Establishing a System of State-Based Electronic Libraries**
The Honorable Robert Kerrey (D-NE), United States Senate

9:20 a.m. **The Electronic Information Era: A Vision of the Future**
Robert C. Heterick, Jr., President, EDUCOM

9:45 a.m. *Coffee Break*

10:05 a.m. **PART I—Information Access and Availability: Government Gateways—Planning, Construction, Refinement**

Introduction & Overview	Jane Bortnick Griffith, Assistant Chief, Science Policy Research Division, Congressional Research Services, Library of Congress
User Needs	Jean Armour Polly, Manager of Network Development and User Training, NYSERNet, Inc., Syracuse University
Government Perspective	Donald A.B. Lindberg, Director, National Library of Medicine, and Director, National Coordination Office for High-Performance Computing and Communications (HPCC)

11:00 a.m. **PART II—Competition and Cost Concerns: Information as a Commodity—Fee vs Free**

Introduction & Overview	Barbara Markuson, Executive Director, Indiana Cooperative Library Services Authority
User Needs	James P. Love, Director, Taxpayer Assets Project
Provider Concerns	Ronald Plesser, Esq., Piper & Marbury
Government Perspective	Donald R. Johnson, Director of Technology Services, National Institute of Standards and Technology

12:15 p.m. *Lunch* (on your own)

1:30 p.m. **PART III—Information Policy: The State's Role**
Senator Richard Varn, Iowa State Legislature

2:15 p.m. **PART IV—Intellectual Property: Information Ownership in the Electronic Age**

Introduction, Overview & User Needs	William W. Ellis, Associate Librarian for Science and Technology Information, Library of Congress
Owner Concerns	Jon Baumgarten, Esq., Counsel to Association of American Publishers, Inc., Proskauer, Rose, Goetz and Mendelsohn
Government Perspective	Dorothy Schrader, Associate Register for Legal Affairs, Copyright Office, Library of Congress

3:10 p.m. *Coffee Break*

3:30 p.m. **PART V—Information Initiatives: Electronic Libraries of the Future—Implications for Federal Libraries**

Introduction & Overview	Robert Wedgeworth, Interim University Librarian, University of Illinois
New Roles for Libraries	*Emerging Roles and Responsibilities for the Federal Library and Information Professional in the Electronic Era*—S. Michael Malinconico, Professor, School of Library and Information Studies, University of Alabama

4:25 p.m. **PART VI—Summary and Discussion**

Concluding Remarks	*Government Information Policy and Administration in the Next Century: Is Nothing Sacred?*—Harold Relyea, Specialist in American National Government, Congressional Research Service, Library of Congress
Discussion & Wrap-up	*Approaches and Opportunities*—Robert Wedgeworth

5:00 p.m. *Adjournment*

Introductory and Special Remarks

Mary Berghaus Levering
Executive Director
Federal Library and Information Center Committee

Donald C. Curran
Associate Librarian for Constituent Services
and FLICC Chair Designate
Library of Congress

James H. Billington
The Librarian of Congress

Mary Berghaus Levering welcomed federal librarians to the tenth annual Forum, which provides a platform for discussing federal information policies, programs, and procedures and serves to help inform the Congress, federal agencies, and others concerned with libraries and information centers.

Levering underscored that the Federal Library and Information Center Committee (FLICC) and the Library of Congress have a symbiotic relationship, and the support of Donald C. Curran and James Billington has been vital to the success of the annual FLICC Forum.

Curran said that the new and emerging information technologies make it necessary to re-examine the rights and responsibilities of users and providers. The Forum speakers would focus on four topics of concern:

1. Information access and dissemination through government information gateways;
2. Competition and cost concerns surrounding information as a commodity;
3. Intellectual property and information ownership in the electronic age (a problem he hopes "people of goodwill" will solve and remove from conference agenda topics); and
4. Information initiatives for libraries of the future.

"I choose to be optimistic about the library of the future, and this library in particular," Curran said.

James H. Billington expressed the Library's commitment to supporting other national libraries, other federal libraries and information centers, and FLICC's work of coordinating and representing the federal library and information center community.

Based on the premise that users and producers of information and information professionals must help policy makers establish government's direction, the Forum posed three questions for speakers to address:

1. How can this democratic society ensure widespread availability of information in the modern world?
2. How can the growth of the information industry be fostered, and how shall the rights of creati . e individuals be safeguarded?
3. How shall federal information professionals protect the taxpayers' investment by acquiring and using information resources efficiently?

Billington introduced the Forum keynote speaker, Senator Robert Kerrey. Three days prior to the Forum, on March 22, 1993 Senator Kerrey introduced the Electronic Library Act of 1993, Senate Bill 626, providing for establishing a system of state-based electronic libraries that would make multimedia educational programs, research, and information services available to all Americans through public libraries and electronic networks.

The Library of Congress is already making portions of its unique collections available electronically through the American Memory Program and is excited about a pilot program that is a cooperative effort with the University of Nebraska to distribute, over the seven-state MIDNET network, the Library's collection of Matthew Brady Civil War photographs.

Billington announced that the Library's public online catalog soon will be available free over Internet and pledged the Library's assistance "in making Senator Kerrey's visionary system of electronic libraries a reality."

Establishing a System of State-Based Electronic Libraries

The Honorable Robert Kerrey (D-NE)
United States Senate

Senator Kerrey explained his reasons for introducing the Electronic Library Act of 1993, a new bill that would establish a system of state-based electronic libraries.

These libraries would accelerate the formation of archival information and also give access to information by providing hardware, software programs, data resources, and networking capabilities. Furthermore, the libraries would undertake outreach activities preparing teachers and others to use the information and equipment and to create their own programs and materials.

A state-based electronic library could become part of a state university, of state government, of a cooperative venture among municipal libraries. It could even be a profit-making entity. Each state would decide where to locate its library, but all would be collaborative partnerships of federal, state, and local governments, schools at all levels, and the private sector. Properly designed, the electronic libraries would:

- Promote job creation;
- Help citizens become better informed;
- Make government information more accessible and usable;
- Provide technology to help teachers and parents improve their instructional skills; and
- Encourage young people to learn to read, write and explore.

Senator Kerrey stressed the latter point, saying, "Communication technologies are viewed by many of us as a mixed educational blessing. We regard it as a curse when entertainment is its only use." This use has shortened attention spans, dulled creativity, and lowered verbal and writing ability. Colleges, and consequently parents and public schools, have lowered standards and demanded less work and knowledge of students.

Raising college standards won't be enough. Adults need to demonstrate that they value learning. Yet the public libraries--a unique American institution committed to citizens' universal education--often suffer budget cuts first, and children spend their leisure time on "the expanding world of entertainment. This year more Americans will check out video tapes at video stores than will check out books at the public library."

An excess of entertainment endangers the culture, the capacity for self-government, and the economy. Citizens need to know more today to make decisions in government and to adjust to an increasingly demanding workplace.

This year more Americans will check out video tapes at video stores than will check out books at the public library.

As the need for thinking and verbal skills has grown, SAT scores have dropped. In 1972, 116,630 students scored above 600; in 1992, only 75,243. One study shows that even selective colleges have seen a 50 to 60 point drop in their students' verbal scores.

Communication technology, properly applied, can help communities reverse the plunge. It is becoming increasingly available and affordable. Internet is experiencing user growth of 15 percent a month, and the National Research and Education Network (NREN) will offer even greater possibilities. The Library of Congress and other federal libraries are leading the way in making valuable information available to the public.

Imaginative collaborations of teachers and federal agencies can bring current knowledge into the classroom, but most schools cannot undertake such programs because they lack adequate hardware and software, money and facilities for networking, and training in the use and production of materials.

The legislation seeks to make electronic libraries a resource not only for schools but also for businesses and households. It builds on what exists, especially Internet, and prepares for use of what is to come. It allows for prototype projects, such as distance-learning programs in Nebraska.

Hardware, software, and networking interests complain that the vision is not clear, that people don't understand or have the training to use what's available now. State electronic libraries can serve as a catalyst to overcome these problems, making sure the technology serves the people.

The Electronic Libraries Act supplements other legislation. It derives its approach from the National Science Foundation's (NSF's) State Systemic Initiative, a multiyear program bringing together many interests to make a system-wide change.

The Act does not seek to solve all educational problems through technology. As Neil Postman

wrote, "All instructional technologies--new and old--are impotent machines unless we have some meaningful story to tell our children."

The Electronic Information Era: A Vision of the Future--Paradigms and Paradoxes

Robert C. Heterick, Jr.
President
EDUCOM

For 500 years, since movable type created an economical way for the average citizen to acquire information, society has been organized around a print paradigm. For several years exponentially increasing costs have resulted in American research libraries holding a smaller percentage of the world's scholarly information than they did the previous year.

In the last decade a new paradigm based on digital technologies has been forming. People who formally thought of themselves as in the recording, computer, and film businesses now realize they are in the information business.

Libraries can play the pivotal role in the information revolution . . .

Digital technologies' exponentially decreasing costs and exponentially increasing capabilities have made this possible, but many early adopters have failed to realize that they can no longer do business the old way. They must re-engineer to capture technology's full potential.

Rapid diffusion has characterized the computer and communications technologies--radio, television, the VCR--that have captured a meaningful market share. Those not accepted quickly soon fade. Only the telephone has diffused slowly, and that probably is because originally one had to use a human mediator to use the service. That suggests that universities and libraries built on the mediator model will need to move to disintermediated digital technologies.

To succeed, these technologies also will need to be highly differentiated or they will be consigned to niche markets--another departure from the print paradigm used by libraries and schools.

The agriculture revolution provided humankind with a leverage of approximately 100; its driving force was human labor, and land was the measure of wealth. The industrial revolution provided a leverage of approximately 1,000; its driving force was capital, and artifacts--such as refrigerators and cars--were the measure of wealth. The information revolution provides a leverage of more than one million in computing and an additional million in communications; its driving force will be knowledge, and access to it will be the measure of wealth.

Libraries can play the pivotal role in the information revolution to the extent they can shed the mantle of compromises developed under the print paradigm and reengineer themselves around the emerging digital technologies.

Part I--Information Access and Availability: Government Gateways--Planning, Construction, Refinement

Introduction and Overview

Jane Bortnick Griffith
Assistant Chief
Science Policy Research Division
Congressional Research Services
Library of Congress

Technological trends offer many opportunities. Currently an enormous wealth of information is being gathered in digital form, doing away with the need to convert from print. We have new ways of dispersing this information, including CD-ROMs and networks.

The greatest potential lies in linking resources in ways libraries could not before. Central holdings are no longer essential, for users can gain access to information through many gateways.

The greatest potential lies in linking resources in ways libraries could not before.

The institutional environment has changed greatly as the awareness of the role of technology has grown. In federal libraries, major challenges include modernizing old systems and improving management of the vast amount of information being generated.

Today stringent budgets and smaller staffs have sharpened interest in reinventing government and using technology to increase productivity. That requires access to information and the ability to process and distribute it.

To accomplish this, the federal government must develop policies, and both the executive and

legislative branches have demonstrated a desire to do this. Among the many pieces in the policy mosaic are the Electronic Library Act that was just introduced, NREN legislation, and reauthorization of the Paperwork Reduction Act.

The convergence of trends--in technology, institutional interest, and political interest--provides unique opportunities for intermediaries to rethink their roles in providing access to information and for stakeholders-- government, academia, and business--to cooperate. To succeed, we must crash through several barriers:

- Investment costs for such purposes as converting collections;
- Institutional inertia and resistance to rethinking how to operate not just faster but differently;
- Outmoded policies, procedures, and practices; and
- The potential for overselling the product and underestimating the difficulty in creating data bases and in learning to use networks.

Electronic Information and User Needs

Jean Armour Polly
Manager of Network Development
and User Training
NYSERNet, Inc.
Syracuse University

NYSERNet is a non-profit organization whose mission is to advance education and research through the use of high speed computer networks. NYSERNet is the midlevel regional network of the NSFNet serving New York state. It has over two hundred affiliates in K-12 and higher education, state and local government, libraries, hospitals, museums and other non-profit groups. It sells TCP/IP network connections via leased lines, dial-up IP, and VT-100 terminal access to the global Internet. Some of NYSERNet's value added services includes a help-desk, training workshops, conferences, user groups, newsletters and documentation, and a speaker's bureau.

What is NYSERNet up to these days?

Project GAIN - the Global Access Information Network: What happens when five rural public libraries and one Indian nation school are given equipment, training, telecommunications software, Internet connectivity, and unlimited help--and they are turned loose on the Internet? That is what Project GAIN hopes to answer in the next year.

The study is funded by the J.M. Kaplan Foundation and Apple Computer, Inc, through its designation as one of four 1993 Apple Library of Tomorrow awardees. Other project sponsors include OCLC, who donated unlimited First Search online searches, Addison-Wesley and O'Reilly and Associates, who donated books about the Internet, and U.S. Robotics, who donated modems to the project.

The outside evaluator is Dr. Charles McClure of Syracuse University, and the evaluation plan calls for numerous pre-tests and post-tests of attitudes and knowledge about the Internet.

Early results show the value of the Internet to the rural community. Can the rural libraries' resources add anything of value to the larger Internet community? NYSERNet hopes to test this by making some of these resources available on the NYSERNet gopher. A CD-ROM and videotape will be some of the additional products of this important study.

Gopher Development: NYSERNet's gopher team has developed one of the nation's most popular one-stop-shopping gopher servers.

It is arranged into a section called the Reference Desk and numerous "Special Collections". The Reference Desk classifies Internet resources using the Dewey Decimal Classification system so often found in school and public libraries. Special Collections are groups of specialized gopher and text resources, chosen for various Internet constituencies: K-12, libraries, training, state and federal government information, etc. Some resources will find themselves both classified within the Reference Desk hierarchy and within the Special Collection subject tree.

Much of NYSERNet's gopher development recently has been in the K-12 arena. "Empire School District" includes resources and files of interest to K-12 educators and students. Included are such things as the CNN Newsroom classroom guides, the ASK-ERIC service, curriculum wings, a field trip area to other remote computer resources, and much, much more.

VERONICA: NYSERNet manages one of the four public VERONICA servers in the world. A typical day averages over 4,000 queries of gopherspace through the NYSERNet VERONICA, many of them from overseas.

PUBLIB and PUBLIB-NET: In December, 1992, NYSERNet's computer became host to the first Internet listserv discussion groups dedicated to

public libraries. As of this writing, there are over 1,000 subscribers to the combined lists, including librarians from every continent except Antarctica.

Training Modules: Having a network connection is not the answer, using it is the answer. In order to help people learn to find and use Internet tools and resources, NYSERNet is developing a menu of training modules to be deployed around the state in months to come. These will include technical sessions on managing a TCP/IP connection on a local area network, care and feeding of a gopher server, and more.

CUSeeMe: NYSERNet is also experimenting with Internet packet video for the Macintosh as developed by Dick Cogger at Cornell. Using a small video camera and VideoSpigot board for the Mac, up to eight windows on distant CUSeeMe users can be viewed. This technology was recently used by others for the Global Schoolhouse project, which visually linked students in the UK and various spots in the US for a joint environmental conference. Audio must be provided by telephone, although the latest version of CUSeeMe allows users to type messages back and forth. Although it is not full-motion video, it is similar to pictures we are accustomed to seeing from the space shuttle broadcasts, and it is certainly useful for such things as distance learning and remote conferencing. It is also possible to send videotapes over the Internet in this manner.

What are the User Needs in Electronic Information?

Ability to Have Ubiquitous Network Access: Gloria Steinem has said that "public libraries are the last refuge of those without modems." She probably meant that people without access to online information from home will have to trudge down to the library in order to get printed texts. What if public libraries were the on-ramp to the Internet? They would be a good place to deploy this technology because they are in the information business already. They respect confidentiality. They do not censor information. They do not restrict people from information because they are minors. They have embraced the "free, not fee" model. But what kind of problems face public libraries today? They have their budgets slashed. Telephone reference and bookmobiles no longer exist in many places. There is no technical infrastructure to support the Internet firehose suddenly spewing into the library. If legislation points to public libraries as the safety net for public access to NREN and NII, there must also be funding attached to build a technology foundation and yes, even technology culture, in some of these libraries first.

Ability to Easily Find Information: Information needs to be better organized and have more reliable tools. But who is building the search retrieval tools and why? What potential for abuse is there? How can users be assured that no one has tampered with the archie or VERONICA indexes to remove, say "HOLOCAUST", so that "no hits" will be found?

Ability to Authenticate Information: How can users be assured that information is timely and accurate? How do we know that information that claims to come from, for example a government agency, really comes from that agency? Where are the review sources for the Internet?

[libraries] just need a little updating from their "book" focus to be more relevant than ever today.

Ability to Keep Information Requests Private and Confidential: Who is keeping track of what keywords you are searching on, and what is done with this information? Who monitors what USENet newsgroups you regularly read, or listservs you subscribe to?

Ability for Access to be Two-Way: A bit-pipe should not just be one-way, like the cable television model. Users should be able to talk to producers of electronic information, not just access it. Thus, it is important for the Clinton White House to establish its electronic mailbox, which it has done. However, if you send mail there, you get an automatic form letter back immediately saying, basically, thanks for trying this out, it's an experiment, maybe sometime in the future we'll get back to you. This is not an example of two-way communication.

Ability for Access to be Scalable to New Technologies: Users used to think 300 baud was fast and 256 colors were pretty. The notion of basic "universal access" sometimes relegates users to a technological backwater where information is only text-based and never travels faster than a sedate speed. User needs will shortly include multimedia: full motion video, color photographic quality graphics, audio, virtual reality, and more. Not everyone needs to be able to travel in the Concorde, but we shouldn't be building information highways for horse-and-buggies either.

How will Libraries, in Particular Cope? How will they generate new funds to pay for electronic information? Or will they reallocate existing funds as old sources go out of date, and they order electronic ones instead?

They have been guided in the past by looking to Ranganathan's five rules regarding libraries, published in 1931. They just need a little updating from their "book" focus to be more relevant than ever today:

- [Information] is for use;
- Every [user], his/her [information];
- Every [bit of information], its [user];
- Save the time of the [user]; and
- The [Net] is a growing organism.

A Government Perspective

Donald A. B. Lindberg, M.D.
Director
National Library of Medicine
and of the National Coordination Office for High-Performance Computing and Communications

Before beginning his prepared presentation, Lindberg responded to comments others had made. He noted that most libraries have suffered budget cuts and have been making unprecedented use of library loans. While the High Performance Computing and Communications Program (HPCC) is costly, "Somebody has to do it." It is a matter of "pushing back frontiers," and you can't pinch pennies along the way. You also can't operate with 300 baud modems. Modems with 14,400 baud are "much nicer," but Internet with Ethernet is better yet.

It is a matter of "pushing back frontiers," and you can't pinch pennies along the way.

It's essential to have massively parallel computers, which is unlikely to happen accidentally. That need and the cost has necessitated government involvement.

Government has been the first big customer for hardware, software, and training. Development has occasioned an interdependency of ten agencies, with the big four being the Department of Defense, the Department of Energy, the National Aeronautics and Space Administration (NASA), and NSF. Employees of these agencies have displayed tremendous knowledge and enthusiasm for the program.

During the Depression the Library of Congress saw a rare opportunity: It could buy a copy of the Gutenberg Bible. Despite the hard times, Congress appropriated $1.5 million for the purchase, which millions have viewed in the Great Hall. Building the electronic superhighway presents a similar opportunity.

President George Bush signed the High Performance Computing Act (Public Law 102-194) in late 1991. It dedicated resources to turning an information vision into reality and showed Congress' commitment to maintain American leadership in high performance computing and communications networking. The National High Performance Computing and Communications Program sets goals and priorities, coordinates the Federal agencies' programs, establishes the NREN, and supports research, development, and training. Approximately 85 to 90 percent of the funds authorized initially were for research and development. The original plan was that between 1992 and 1997 the program's budget would grow from $600 million to $1.2 billion. The growth will likely be somewhat greater because other agencies will also be added to the program. The plan for HPCC has included certain Grand Challenge computational tasks. These include building a complete anatomical image library of the human body, designing an engine to optimize combustion and minimize pollution, enabling lifelong learning through remote data bases, and designing high-speed civilian aircraft.

Meeting many of these "Grand Challenges" will depend on the development of NREN and its gigabit network. That network can enable scientists from around the country to carry out collaborative research—a hallmark of modern science—and serve as a testbed for new communications technologies.

A second phase will be the implementation of legislation introduced in 1992 by then Senator Albert Gore, and endorsed by President Bill Clinton in 1993, to make the national information infrastructure usable by those with personal computers.

In 1989, approximately 100,000 people were using Internet. Today more than five million are using it through 10,000 networks. Approximately 1000 colleges and 1 000 high schools use it, and the push is to connect community colleges, hospitals, and local school systems.

NREN will multiply the Internet capacity. But many of those who use such networks as NYSERNet, which you just heard about, are people who already read and are technically able.

"Reading is where we are doing badly," said Lindberg. He favors research on using information processing to teach reading. While visiting one of six gigabit test sites, Lindberg asked what percentage of people in that state could read. The answer: 62 percent. "There's reason to worry about the low-end services," he concluded.

Part II--Competition and Cost Concerns: Information as a Commodity--Fee vs. Free

Introduction and Overview

Barbara Evans Markuson
Executive Director
Indiana Cooperative Library Services Authority

Fee vs. free is a compelling, increasingly complex issue confronting a society that seeks to formulate public policies to encourage both our public goals of free access and private goals of benefiting from investments.

Governments at all levels are debating such issues as who should provide networks, when does a public entity become a competitor to a commercial provider, and what costs users should pay. Here are some ground rules for that debate:

- "The difference between fee and free is the 'r' for resources. There is no free information." Focus on who provides the resources for generating and disseminating the information and what the end user has to invest. Should a taxpayer pay to use information gathered with tax dollars? How many public library users can access a data base without eroding the vendor's market?
- Get rid of the myths about who adds value to information and eliminate all claims to exclusivity.
- Make all sectors strong and, perhaps, competitive, and let the private and public sectors, nonprofits, and individuals check and balance each other.
- Never rely solely on fee-based services for information every citizen should know.
- Develop a precise vocabulary for dealing with information as a commodity.
- Focus on long-range as well as short-range goals. Libraries could become information dumps where users try to retrieve information with incompatible tools and inadequate resources.
- Expand policy agendas to deal with the ignorance explosion as well as the information explosion. If information is power, give information stamps to the disadvantaged.
- Information becomes an asset only when the user receives it. Policies must maximize what the user, not just the producer, can do.
- Public institutions are important risk takers in the development of information services. Private industry follows their lead. We need to maximize the return on investments from all sectors.

How many public library users can access a data base without eroding the vendor's market?

- Selling government information has limited merit unless agencies can retain certain funds from increased efficiency in providing specialized services.

User Needs--Pricing of Federal Electronic Information Products and Services

James P. Love
Director
Taxpayer Assets Project
Center for Study of Responsive Law

Federal policies on user fees for information in electronic formats have been in disarray for a decade. Fee vs. free isn't really the issue. The real question is which products and services should be free and how the government should price those that aren't.

Part of the problem is that industry has much greater resources than citizens' groups, and information gives leverage in policy debates. The American Library Association and other library groups have been carrying the ball on information policy, and their problems aren't as worrisome as those of individual users, investigative reporters, and such citizen groups as those working on campaign reform. Internet has made it possible for people concerned with policy issues to connect. "I think of Internet as a newspaper with an unlimited news hole that people keep putting things into," said Love. Information should flow both to and from users, and policy discussions should be in concrete terms.

The Office of Management and Budget (OMB) has tried to address the pricing issue in Circular A-

130, which states that requiring agencies to establish user charges does not mean intent to make the ability to pay the sole criterion for receiving public information. An agency may reduce or eliminate charges if these are a barrier to fulfilling its dissemination obligations.

In 1992 OMB recommended that prices for information products and services cover only the costs of dissemination. OMB lacks mechanisms for enforcing this recommendation, and pricing practices differ greatly. Proposed revisions would allow agencies to ignore current Title 44 provisions setting prices at 150 percent of the cost of dissemination.

Most agencies have no limits on what they charge for electronic information products and services. That is particularly important for the National Technical Information Service (NTIS), which disseminates "a very large product line" and "charges prices that are often outrageous."

The American Library Association and other library groups have been carrying the ball on information policy . . .

In some cases NTIS receives exclusive rights to sell other agencies' information for a share of the sales revenue, thus circumventing limitations. For example, NTIS sells three Environmental Protection Agency (EPA) data sets that citizen groups need to monitor compliance. One on two floppy disks sells for $360; one on magnetic tape sells for $2,360; and one extract tape sells for $2,800. NTIS sells a decade of Federal Reserve bank call reports for $20,000--more than the price of 13,300 paper copies of the *Congressional Record*. "Agencies have been providing information that only the wealthy could buy," Love said.

The Executive Branch made NTIS a self-supporting agency responsible for disseminating many low-volume, unprofitable paper and microfiche publications, so NTIS has to earn profits on other products. Computer data bases of interest to industry have a high value, so these subsidize low-value publications. Citizen groups and individual users can't pay these prices. With privatization, the government was moving into the technical transfer business. Information policy needs to move back to the people's right to know.

Provider Concerns

Ronald Plesser, Esq.
Piper & Marbury

Plesser began by expressing agreement with Love's statements, particularly the points on NTIS dissemination policies. The information industry has been making these points for years. He said, "The concern of turning government activity into commercial activity is not something the industry has ever supported. A government-run dissemination system can become a nightmare." It's important to talk about fee vs. free in the light of the following six principles.

- The government should facilitate public access to government information by encouraging a diversity of sources, including libraries and the private sector, to offer access. "If any one side has the exclusive avenue of dissemination, we all lose. If in twenty years the government is not disseminating anything or it's disseminating everything, we all lose."
- Public right of access to information held by the government should be guaranteed. Restrictions should apply only to certain specific legitimate interests, such as privacy.
- Public access should apply equally regardless of the media on which the records are stored. Plesser recently won a case to get access to digitized Bureau of Land Management records that had been available to anyone when produced on paper. It took him four years.

No one should have a monopoly on government-held information . . .

- Access should be equal and timely. Plesser won recognition of this in filing a suit, which never reached court, to force the Customs Department to make electronically filed cargo manifests available to all, not just the port authorities who were participating in the program.
- No one should have a monopoly on government-held information, and the

government should not restrict citizens in using and disseminating that information. The NTIS contracts to disseminate other agencies' materials are essentially royalty contracts.

- Fees for access should not exceed the government's marginal cost of dissemination.

For a time the information industry thought government should charge high fees so that it would not be competing with the private sector. Now the industry realizes that would raise their costs, too. Also, information dissemination is part of an agency's mission. If it goes off budget and collects fees, it becomes entrepreneurial. It has no oversight, no congressional mandate, and no mission-related reasons for the activity.

AFTI provides an example of bad policy: Its fees greatly exceed costs, it restricts use (no downloading), it destroys government information, it keeps detailed end-user transaction records, and it offers no fee waivers or depository library access.

In contrast, EDGAR serves as an example of good policy: Its fees relate to cost recovery, it places no restrictions on use and has no downstream control, it disseminates information widely, it does nor require end-user data, and it provides CD-ROMs for depository libraries.

The Government Perspective

Donald R. Johnson
Director of Technology Services
National Institute of Standards and Technology

As former acting director of NTIS, which other panelists had criticized for its pricing policies, Johnson suggested approaching the issue of fee vs. free carefully.

"We believe that information that has been developed at the taxpayers' expense should be free," he said. "On the other hand, the end users should pay for the costs of access to the information and any value-added packaging used to make the information useful to them."

NTIS has charged fees for a long time. Its policies have been developed with input from customers, and have been reviewed by inspectors general and the General Accounting Office.

The oldest fee-based service offered by the National Institute of Standards and Technology (NIST) ihvolves direct calibration of individual pieces of equipment owned by private companies. The Institute handles approximately 11,000 pieces a year and generates $7.4 million in fees. The customer pays for handling, the amortization on equipment, and the technicians' time during the calibration procedure.

Another fee-based service involves more than 1,200 types of standard reference materials certified for chemical composition or performance by NIST. That produced $8.5 million in revenue last year. The operation began with industrial metals and has become increasingly sophisticated. Currently the Institute is expanding into biological standards, such as human serum. The development of the standards is supported from tax revenues, but customers pay for the production and handling of the individual samples shipped to them.

NTIS is facing a variety of problems and operates without appropriated funds.

The Standard Reference Data Program goes back to the 1930s. NIST selects and critically evaluates the best technical data from the world's literature and compiles information in tables. NIST now packages most of this information in computer readable form and sells the product directly to end use customers. Again, customers do not pay for the development or evaluation of the data, but do pay for reproduction, packaging and distribution of the individual copies they order.

About ten years ago the industries NIST was serving began changing dramatically. Since the 1930s the government had been selling single copies of "Steam Tables" to a small market of experts. As companies restructured, design engineers who could not use the steam tables in tabular form became the primary customers. The packaging had to be changed to a diskette that includes a set of algorithms for calculation. Developing the software was expensive, and the agency had no budget for it, so it had to develop a fee system that covered the cost. NIST has many products like this.

NTIS is facing a variety of problems and operates without appropriated funds. It receives information from across the government in many different forms, including computer readable material developed for a particular agency's mission needs. NTIS has to reformat and convert that material to standard forms, particularly PC-compatible (as versus mainframe) forms, for the users.

NTIS continues to experiment with delivery. Its new online service, FEDWORLD, is an electronic gateway allowing free access to approximately 100 government bulletin boards in the Washington, DC, area. Later FEDWORLD will hook into Internet.

Part III--Information Policy: The State's Role--Electronic Democracy: Jeffersonian Boom or Teraflop?

Senator Richard Varn
Iowa State Legislature

Before making his presentation, Senator Varn showed a video, *Information Policy: The State's Role*, which he played a role in producing. In the video, James Madison serves as the narrator, commenting that the Constitution was written to be a living document and that technology is testing constitutional principles. Among the examples: For the First Amendment, a reporter not allowed to buy information on computer disks that would require a 2,400-page printout; for the Fourth Amendment, a woman stopped for a minor traffic violation and then arrested for prostitution after being incorrectly identified by a computer check on her name.

Let's not reinvent government three times. Let's do it once and do it right.

American entrepreneurs have made the United States a world leader in information technology, and their products can help increase government efficiency. But policy makers must consider such questions as how to protect the right to know while maintaining the right to privacy and how to manage the information the government collects.

Information policy covers three issues: access, privacy, and government efficiency. The video included a clip from a television news program in which a reporter having no information other than a person's name (Kafka) searched computerized records and found such information as his date of birth, high school graduation date, enrollment in community college classes, dates of marriage and divorce, name of a man who attended his wedding, amount of state income tax, a report of a car accident that resulted in his license being revoked, and a suit against him in small claims court.

More than 50 percent of what the government does is collect, use, and store information. Information policy determines what government collects, who has access to it, and how much it costs.

With government in crisis because of its ineffectiveness, it is looking at information management and trying new methods of distributing information. In California, the state has made job information available at malls in kiosks with touch-screen computers. States sometimes contract computer work to corporations. Subscribers pay fees for use, and those fees become state revenues. This practice may increase efficiency, but it raises the questions of whether all who need access to the information can afford it.

One simple example of saving money through technology is putting files on disks, which take up much less storage space than paper. Technology can assist in education, as in distance-learning programs linking high schools to universities. It can help control benefit fraud in welfare programs through the use of a Smart Card, which resembles an ATM card and gives access to government services.

If legislators continue to ignore the information industry, policies will be made in the marketplace, not in the legislative bodies.

The video concludes with the idea that redesign of government is the goal.

Varn noted that visionaries often are seen as pariahs rather than saviors, but he is a supporter of using technology to achieve electronic democracy. That means using technology to:

1. Increase citizen participation,
2. Improve access to government information,
3. Streamline government operation, and
4. Restructure government.

Each use offers both promises and problems and should be analyzed separately before considering electronic democracy as a whole.

Increasing citizen participation would allow the average citizen to provide more input to decision makers and to feel ownership in the solutions chosen. That increased input can be a burden for officials, tempting them to follow rather than lead in making tough decisions, and increasing opportunities for manipulation by and of special interest groups.

Improving access to government information would allow citizens and the press to be better informed than they are now about what government is doing. Improved electronic access also would give policy makers information they need to make decisions. Problems include lack of privacy, of hardware and software for public use, of consistent data formats, and of expert support for public users. A more fundamental problem is devising a way to

sift through the mountains of data the government collects to find what individuals and policy makers need. Libraries and the information industry often take the lead in finding the way. Giving citizens meaningful access to government information resources depends on the press, library community, information industry, and involved citizenry.

Streamlining and restructuring government will mean, among other things, one-stop shopping for government services. These will be delivered where the customer wants them--over the phone, by mail and modem, and through interactive computer and video. Government at all levels will share any point of presence. Only crisis will force the bureaucracy and citizens resistant to change to streamline and restructure. Each level of government could act alone, but sharing and reducing redundancy would decrease the cost.

Electronic democracy will not solve all problems, but it offers promise, at least if the various levels of government work together on it. The state of Iowa is establishing a network, its version of NREN, because no private company wanted to do it. One challenge is to give every student and teacher access to it. Federal libraries would be good partners. The state should not act alone. "Let's not reinvent government three times. Let's do it once and do it right."

Part IV--Intellectual Property: Information Ownership in the Electronic Age

Introduction, Overview, and User Needs

William W. Ellis,
Associate Librarian for Science and Technology Information
Library of Congress

Undoubtedly sensational changes are coming in the application of information technology to scientific technology, but forecasts differ on what these will be. Forecasts include:

- Journal articles will disappear as new formats for dissemination are born;
- Materials will be far more widely available, but access problems will intensify; and
- Science and technology will be conducted very differently--or not.

Whatever the future of scientific, technical, and all other kinds of information, intellectual property rights, and how these may have a profound effect on users, must be addressed.

Many want ubiquitous access that is free or low cost. This has a potential democratizing influence, but it also could mean the stultifying effect of the availability of masses of entertaining but not edifying information. Electronically available information already is overwhelming many of us, and many users want search strategies (along with low- and no-cost access) that will enable them to find the specific information they need in a form that is ready to use. This poses a challenge to existing arrangements for the administration and compensation of intellectual property rights.

Many want ubiquitous access that is free or low cost.

Owner Concerns

Jon Baumgarten, Esq.,
Proskauer, Rose, Goetz and Mendelsohn and Copyright Counsel to the Association of American Publishers, Inc.

While discussing primarily scientific publishers, particularly of college textbooks, Baumgarten stated that the range of concerns with copyright compliance applies to other publishers as well.

"The publishers' concerns derive largely from the revolutionary changes in the information marketplace." In the 1960s and 1970s they worried about downloading encyclopedias and like works from central remote computer storage facilities so everyone would have these in their living rooms--and not have to buy them. Today the questions go beyond remote storage as such to rapidity and breadth of transmission, fidelity of digital reproductions, and manipulation of information.

The publishers' product itself is changing. In science, the consumer is commonly interested in the piece as well as in the package--in one chapter of a book or one article or one piece of information in an article. Also, its now easy to digitally reproduce charts and graphs for pull text storage and delivery. Networks go far beyond anything imagined, and we have new distribution media, such as CD-ROMS, that are like books but are used very differently from books and journals.

There's also been a change in the role of libraries. It's now service "just in time" rather than "just in case." In Holland a librarian said he saw his role as giving users what they want when and where they want it and only what they want. "Now what is the library and what is the publisher in this case?"

The economic impact is changing. Owners used to think of electronically stored information as ancillary income. Now it's replacement income. Subscriptions are disappearing; photocopying and electronic copying are replacing them.

There's also been a change in the role of libraries. It's now service "just in time" rather than "just in case."

Users are changing. They will increasingly set information parameters in interactive systems. Publishers will provide guides through information--customized services. Knowledge rather than raw information will be the product. That can be highly profitable for publishers, including the learned societies and the nonprofits. Government or institutional patronage may provide an alternative to the profit motive assured by copyright, but at the price of official selection, control, and orthodoxy which is antithetical to good science. Copyright owners have several specific concerns.

1. There is a movement toward intrainstitutional self-copying without permission, and court cases have been necessary to stop it. Corporate scanning of journals is one example. Another is the practice at universities of making course packs from bits and pieces of several publications and compensating none of the copyright holders.
2. Interlibrary loan is turning into a fee-for-service operation virtually indistinguishable from the document supply business. It has become an international problem, with materials from the United Kingdom, for example, being brought in without regard for rights of the American copyright owners.
3. A major challenge comes from the manipulability of electronic information. We may need to define new rights, perhaps not authors' rights, that will ensure the accuracy and integrity of information.

Publishers, educators, and librarians have fought copyright wars with each other, but they have a great common interest. "We have got to find a way to make sense out of this revolution we are facing."

The Government Perspective--Government's Role in Striking a Balance in the Public Interest

Dorothy Schrader,
General Counsel
Copyright Office
Library of Congress

The government's role in issues involving copyright policy and the dissemination of information is to strike a balance between providers and users for the benefit of the public. It is a formidable task, and the Forum provides an opportunity for dialogue on the nature of the problem and possible solutions.

Copyright is designed to encourage creation while maximizing the availability of literary, artistic, and musical works--intellectual property.

"Traditionally the courts have been circumspect in construing the scope of intellectual property rights when new technologies alter markets and raise new competing interests." What will happen in the electronic information age? Publishing costs are going up, copying costs are going down, and electronic search and access capabilities are improving. Monitoring access raises questions of privacy rights.

The fair use provision of the Copyright Act reduces tensions between owners and users of print media, but experts differ on how the four fair use factors, particularly the effect on marketability, will affect owners and users of electronic media. Fair use analysis should apply to copying from computer networks much as it does to other methods of verbatim copying, such as photocopying and tape recording. Again privacy issues may be involved in regulating private copying, as in the home.

Among the solutions suggested to the proprietary rights/public interest conflict are: exemptions for private use; governmental or private clearinghouses; alternative pricing; surcharges on equipment; and special royalty schemes. Anti-copying systems may provide temporary partial solutions. Some solutions require legislation, but laws cannot succeed until the groups most affected have reached a consensus.

All copyright legislation in this country stems from the constitutional authority to Congress to legislate exclusive rights for authors in order to promote the progress of science and the useful arts. Applying that general standard to specific activities is difficult.

The printing press gave birth to copyright, and its concepts remain viable for the foreseeable future. The question is how to stimulate new works while facilitating their dissemination to the public at reasonable cost. Who will provide the financial support for creation and marketing? Copyright has provided a mechanism for this for 200 years.

Is it obsolete? No, it remains as appropriate for electronic expression and distribution as it does for printed materials.

We will probably adopt several solutions rather than one. Users may pay, through libraries, a copyright fee which reflects an adjustment for fair use copying. Representatives of authors, publishers, and librarians may negotiate fair use guidelines. New blanket licensing arrangements may be developed. It may be necessary to pass legislation establishing a fair use haven for limited kinds of copying or for other specific exemptions.

Questions and Answers

Q: What are the views on the movement from copyright to contract law and the use of information as a commodity?

A: One frequently cannot do much with a contract without the underlying legal regime that assures the right to be allocated by contract. He sees some movement toward contract solutions, such as software companies relying on shrink wraps and database companies use of subscription agreements.

A comment was made that a Supreme Court decision has limited rights and that there will be more subscription relationships rather than over-the-counter sales.

Q: Is there concern that owners, by not exploring alternatives, will see more people aligned against them?

A: Perhaps the publishing industry has not done a sufficient job in explaining why it has brought litigation and taken positions. Approximately 100 teachers and students, for example, filed affidavits (albeit somewhat orchestrated and off the point) in the course packs case. Their attitudes are important to publishers.

Q: How much does a creator actually receive in scientific publishing?

A: Often journals don't pay authors in funds or royalties. However, as recently noted by a federal judge, the compensation for these authors is the professional credits and advancement they need for promotion and the like. Journals face publishing and distribution expenses--and the cost of putting material into electronic format.

Traditionally the courts have been circumspect in construing the scope of intellectual property rights when new technologies alter markets and raise new competing

Q: Are publishers recognizing that the information community wants articles rather than journals?

A: The major publishers at least are trying to accommodate this demand. Publishers are trying to service this need in a variety of ways, directly and through licensed document suppliers and collective organizations.

Q: What about the possibility of putting an identification number on each copyrighted unit?

A: This has been discussed as one means of accounting. In fact, the NREN law was amended to provide for copyright management and codification system.

Part V--Information Initiatives: Electronic Libraries of the Future--Implications for Federal Libraries

Introduction and Overview

Robert Wedgeworth,
Interim University Librarian
University of Illinois, Urbana

Wedgeworth promised something old, something new, something borrowed, and some blues.

He gave up trying to predict the future after participating in an exhibit on the Library of the Future in Seattle in 1962. He discovered almost all of the future is usually present where the focus must be constantly on who is in charge, who benefits, and who pays.

He said what can be borrowed at the Forum is the best of the points of the speakers. As to the blues, he hears different refrains from across the country. The federal role in the electronic information era will flow from and to the kind of community of which he is now a part. Wiring will have great impact on rural and exurban communities.

From a university standpoint, the state's role in providing support to universities has changed much, in Illinois dropping from 60 percent to 40 percent. Some may think the universities have been very successful in finding other support, but that has changed the way the university is governed. He who has the gold rules. As we move to collaborative funding sources, we need to recognize that our mission will change.

Libraries need to make special efforts to find out what users really want.

An article in a journal discusses who will benefit from electronic libraries. Those using Internet in Washington, D.C., forget who the ultimate users will be. "As with interstate highways, many communities will be left behind if they don't build the ramps and gateways."

A group from Champaign-Urbana asked the university to establish and sponsor a freenet. "I think it's important for the community to be the sponsor so that they get what they really want rather than it being influenced by the university," Wedgeworth said.

Libraries need to make special efforts to find out what users really want. That's particularly important because of finite resources and cutbacks on publishing products and services. The 1990s will see further declines in spending and less support for research and development. We need to recognize we are all in it together; libraries are the connections between publishers and users, so all must work together.

"We need to see a library as an articulated whole." The University of Illinois Library has been a leader. It has had an online catalog for many years. The state has funded a program so that eighteen public library systems make the university's resources available to high schools and elementary schools. Everyone would like more funding than is available for delivery of services, but this program seems to be an embryo of the system we want to establish nationwide. "The promise is tremendous, but we must not let expectations run away from resources."

Federal libraries are unrecognized resources. FLICC should encourage the development of a mechanism for one-stop shopping and discourage the escalation of expenses for getting information for consumers. Federal libraries can help with access and document services, file storage and preservation.

We constantly underestimate the need for education and training. Universities agree they are teaching too many courses they shouldn't need to teach but have to because students don't have the necessary background. We need an educated citizenry. "We can't assume people will come to electronic libraries ready to exploit them. We need training modules so people can make use of the services."

The less intermediation that is necessary, the more services libraries can provide, but we can't reduce the level of intermediation if we don't educate users.

Borrowing from a 1988 Office of Technology Assessment (OTA) document on assessing federal information policies in the electronic age, Wedgeworth said the electronic format debates are obscuring the need to carry out agencies' missions and open up the government's information resources.

Back to the blues: Since 1988 Illinois has canceled 6,000 journal subscriptions. The cost of electronic subscriptions is an option, but the legislature gives funds for buying books and journals.

The idea of charging for services is distasteful. Librarians must make sure those who govern understand the issues of the electronic information age. If we don't, we will all pay a higher price.

Emerging Roles and Responsibilities for the Federal Library and Information Professional in the Electronic Age

S. Michael Malinconico,
Professor
School of Library and Information Studies
University of Alabama, Tuscaloosa

Government's principal product is information, and in the last ten years information handling has undergone major changes. More dramatic changes are coming.

Electronic information handling technologies have altered enterprises and transformed the roles of staff, including librarians. They have

unprecedented opportunities to lead the bureaucracies in understanding how to exploit information resources to produce more effective and efficient operations.

The Federal government is the world's largest user of information technology. Electronic technology enables government bodies to share and reuse data as never before.

Many people first learn to use information technology with word processing or spreadsheets, but they first realize its power when they retrieve information in a library. That gives new value and credibility to librarians as information management specialists.

Now people don't have to be in a library to retrieve information. Electronic systems make libraries invisible, simultaneously everywhere and nowhere. Sources go beyond formal collections to by-products of work in progress. The very variety and richness may overwhelm users and magnify the importance of receiving experts' assistance in exploiting resources. Librarians need to be prepared to work closely with users as professional peers or consultants. They need to be ready to insinuate themselves into research and work teams to prevent information problems from reaching crisis proportions. They need, in fact, to master marketing.

Information handling systems supporting such research projects as NASA's *Mission to Planet Earth* have generated such prodigious quantities of data that users need librarians' assistance in locating what they need. Information from major projects may be so badly labeled or stored that it can take years of work to retrieve useful pieces. If librarians were in on such projects from the beginning, they could prevent such problems.

Their skills also are needed to help the thousands of scholars and researchers who are creating data that they store in their personal computers or mainframes and then share over electronic bulletin boards.

People who can create and maintain systems suited to particular situations will be in demand, but these people also will need to maintain some level of uniformity across agencies and organizations to facilitate information and resource sharing. A new simplified, flexible system of bibliographic control is needed. Such a system would apply in the private sector also, and perhaps the Federal and special libraries should work together to develop it.

Librarians can no longer assume that print collections will continue to be more important than electronic sources in the foreseeable future. Systems that permit the creation, storage, and transmission of electronic images are constantly becoming more common, more capable, and less costly. The three national libraries have led in developing these systems. One example is the project demonstrating the viability of filling interlibrary loan requests over networks with digital images of documents and storing these images to use in meeting later requests.

Old, rare documents may be more readily available in electronic form than new ones. The national libraries have been working on this for several years, and in 1989 the Library of Congress initiated the American Memory Project, through which it will distribute digital images of unique materials. Now the medium of distribution is optical disks, but the Library is planning delivery via telecommunication.

The technological impediments to wide-spread use of electronic imaging technology are falling. By 1996 NREN will be able to transfer the *Encyclopedia Britannica* in less than two seconds. Telephone companies are modernizing with fiber optic and digital technologies and studying ways to make such high capacity communications services as broadband ISBN generally available. Local system vendors, including CARL and NOTIS, have announced image access capabilities for their systems.

Librarians need to be prepared to work closely with users as professional peers or consultants.

Technology exists to make possible virtual libraries--electronic communication and computing networks that make it possible to retrieve information from wherever it is maintained and to combine disparate sources to create new information.

The Federal government has invested heavily in the technological infrastructure needed to maintain the largest data store in history. Information now goes to users when and wherever they need it. Collections of documents are diminishing in importance, but the need for information professionals' special skills is growing. Their information management skills will permit them to make more direct contributions to their organizations' operations than they have previously.

Exploiting the government's formidable information resources will take many individuals' skills and cooperation. Federal information professional can provide much of the leadership needed, but they must be proactive, must seek opportunities to demonstrate how to transform and improve the bureaucracy's operations. "They must

learn to function more like consulting information engineers than traditional information resource custodians."

Part VI--Summary and Discussion

Government Information Policy and Administration in the Next Century: Is Nothing Sacred?

Harold Relyea
Specialist in American National Government
Congressional Research Service
Library of Congress

The government information system is rapidly changing, and President William Jefferson Clinton's pledge to reinvent government will continue that process.

On March 3, 1993 he announced a national performance review, saying, in part, that it's time the government "managed its affairs in the context of an economy that is information-based, rapidly changing, and puts a premium on speed and function and service, not rules and regulations."

The President has made other statements with clear implications for the government information system. During the campaign he called for "a national information network to link every home, business, lab, classroom, and library by the year 2015." He told a joint session of Congress that his plans for infrastructure and community development include "high tech information systems." His accompanying report called for new investments in information technology and revitalized use of such technology by Federal agencies. The report also mentioned launching a "broadband, interactive telecommunications network" with $54 million in grants.

Increased use of information technology will give Congress many opportunities and options for reinventing government . . .

Another plan noted the need for updating policies on privacy, information security, records management, information dissemination, and procurement. Congress will have a role in these policy changes.

Increased use of information technology will give Congress many opportunities and options for reinventing government, including important administration and management decisions. It may be necessary to redesign agencies from a customer perspective. Some agencies may no longer need large field staffs. Structure, function, and even mission may change. A new federalism may emerge.

The management, coordination, and overseer roles of the OMB, the Government Services Administration (GSA), the Government Printing Office (GPO), and the National Archives and Records Administration, among others, will probably require reassessment. GPO may be transformed into a congressional information agency.

Is nothing sacred? Yes. One sacred element is the sovereignty of the citizenry. Its exercise in the electoral process changed leaders and brought in those with ideas for reinventing government. Changes may be of a magnitude not experienced since the New Deal.

Government's role in the electronic information era affects not just information policy but the creation of a revitalized model of governance. The challenge we face is of vital importance to electronic information systems, American government, and our country's future.

Discussion and Wrap-Up

Robert Wedgeworth
Interim University Librarian
University of Illinois, Urbana

Participants in the Forum had been given a grand tour of approaches, opportunities, obstacles, and some of the promises of the electronic era by the Forum speakers.

Congress and the administration are open to establishing a strategic direction for dissemination of federal information. The need is widely recognized--in principle. The differences are on the means of implementation.

The introduction by Senator Kerrey of the Electronic Information Act of 1993 was timely. In the heartland people realize the limitations in getting at the source of information, and the bill addresses that problem.

The conflicts between publishers and users will change with the technology. "Only horses live in a stable environment," says Maurice Fine of the British Library.

The promises of the electronic information era will be fulfilled at an accelerating pace. The work station of the future will be bringing the real world to you in video in real time--and it will be interactive.

The bad news is that funding is not there to finance the software research that will bring products to the public in a reasonable time. "That's what needs to be accelerated."

Wedgeworth said he loves Internet but is "flummoxed" by GOPHER. He shares in the mixed blessings that communications technology has brought. It can be very exasperating but is the only way we can get things at the last minute. "The future is already with us." He communicates with colleagues around the world every day and secures texts of rare materials.

"What we need is planned coherence. You are part of what's going to happen."

Comments

Malinconico commented that he was puzzled by Internet even though he is much more familiar with it than most users. He said, "We need to disabuse ourselves and our users of the notion that libraries will become easy to use. ... It's an enormous mistake when we try to portray the library as a self-service institution. And we diminish ourselves when we do so."

Wedgeworth added, "Let's not forget we have to do something to prepare young people to exploit information technology. If we put all our efforts into the hardware and software and forget the users, it will not achieve its potential." ■

Government's Role in the Electronic Era: User Needs and Government's Response

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Papers and Remarks

Establishing a System of State-Based Electronic Libraries

The Honorable Robert Kerrey (D-NE)
United States Senate

On March 22, 1993 I introduced a bill--the Electronic Library Act of 1993--which would authorize the establishment of state-based electronic libraries. Senators James J. Exon (D-NE), Daniel P. Moynihan (D-NY), William Bradley (D-NJ), Thomas A. Daschle (D-SD), Joseph Lieberman (D-CT), Jeff Bingaman (R-NM), and Mark O. Hatfield (R-OR) joined me as cosponsors of this legislation.

The purpose of the state-based libraries is to accelerate the formation of useful and diverse archival information. However, these libraries should not be passive archives.

The Role of State-Based Libraries

Instead, these libraries would be responsible for providing access to a wide range of hardware, software programs, data resources, and networking capabilities. The libraries would be responsible for demonstration and outreach activities for developing training and education programs in the use of computer and networking technology. They would be responsible for demonstrating the growing hardware and software that will allow teachers and others to create their own programs and materials.

The state-based electronic library could become a part of state college or university. It could be located inside of state government using the databases of state agencies as its foundation. It could also become a cooperative venture of existing municipal libraries. It is possible a state may decide to establish its electronic library as a profit-making venture. These kinds of decisions should be made by state leaders, not the federal government.

Collaborative Partnerships

The unifying requirement of this legislation is that state electronic libraries should be collaborative partnerships of the federal, state, and possibly municipal governments, primary and secondary schools, post-secondary educational institutions, and the private sector, The best partnerships would involve business, teaching, technical, and creative expertise.

Properly designed, they can promote job creation by helping businesses find new customers and assisting in the development of a new class of information entrepreneurs. Properly designed, they can help people become better informed citizens. The information held by governments at all levels should become more accessible and usable. Properly designed, they can be a resource for parents and teachers who want to use technology to improve their instruction skills. Properly designed, they will be a place where young people want to go to learn to read, write, and explore.

This last point deserves special emphasis and attention. Communication technologies are viewed by many of us as a mixed educational blessing. We regard it as a curse when entertainment is the only use. It has shortened attention spans, dulled the capacity of our senses to imagine and create, pulled our communities off the street into the vortex of a hundred millions cathode ray tubes, and pushed down our verbal and writing ability.

The Need for Higher Education Standards

In the March 21, 1993 issue of *The New York Times*, Albert Shanker, president of the American Federation of Teachers, discusses an analysis of lower verbal scholastic aptitude test (SAT) scores. He makes the valid point that our colleges need to set higher standards if our high school students are going to make the effort needed to excel. It is a topic for a separate discussion, but it is worth quoting Mr. Shanker's last paragraph--because I agree with it.

"Shouldn't schools and parents be doing more? Shouldn't they be putting pressure on youngsters--holding kids to higher standards and forcing them to

work harder? They can try, but unless they can say, 'You won't get into college unless you work harder and meet standards,' the pressure is not going to work. In lowering their standards, colleges have undermined the authority of public schools and parents to demand more of students."

To that I say, "Amen."

However, we need to do more than raise standards for entrance to college. We adults need to demonstrate that we value learning, and we need to build according to that value. That is where libraries come in.

Public libraries--which made a relatively new technology, the book, available to all regardless of income--are a unique American institution. No other country has demonstrated such a commitment to universal education and learning. This Jeffersonian commitment derives from the idea of what constitutes a citizen.

America's experiment with the public library was a decision by private and public philanthropy to endow every American with the opportunity to read and study. America--unlike her industrial competitors--made a virtue of universal, ubiquitous access to books and other written materials. Our libraries were more than a place to read. They become advocates for reading and, as such, became responsible for producing millions of informed and prepared citizens.

Lately, things have not gone so well for libraries. Not only are they often the first thing closed when local money is tight, but we adults have been asleep to the competitive demands on our children's leisure time. While we were asleep, the late 20th century public library has been eclipsed by video stores, cable television, and the ever-expanding world of entertainment. This year more Americans will check out video tapes at video stores than will check out books at public libraries.

I do not object to entertainment, but in excess it endangers our culture, our capacity for self-government, and our ability to compete economically.

While we have been busy entertaining ourselves, the world has become more complicated and difficult. Today's American citizen--if he or she expects to make informed decisions--must know more, not less, than was needed a generation ago.

Changing Requirements in the Workplace

While we have been entertaining ourselves, the American workplace has changed. Never before has the correlation between the ability to learn and income been so strong. Never before has the need for more than just a strong back been such a prerequisite for economic success.

To earn your way into the middle class today, a worker must be able to do far more than a generation ago. As workers become thinkers as well as doers, verbal skills become much more important.

Thus, the study referred to by Mr. Shanker earlier is worth examining again. This study, in the January 13, 1993 *Chronicle of Higher Education*, by Christopher Shea, analyzed the decline over the past twenty years in the proportion of students who get top scores on the verbal SAT Given the importance of verbal skills in the workplace, Shea's observations are chilling.

According to the statistics, fewer students scored 600 in 1992 than in 1972, even though more students took the exam. In absolute numbers, 116,630 scored above 600 in 1972, and only 75,243 in 1992.

To seal the dire conclusion, Mr. Shanker cites another study, "The Other Crisis in Education," by Daniel Singal of Hobart William Smith College. Mr. Singal notes a 50 to 60 point drop on the verbal SAT of students going to selective colleges. His conclusion: "These kids are less able to understand what they read than students a generation ago, so they need shorter and easier assignments. They are less able to write or think or carry on a coherent argument. And, because they have read less and understood less, they also know less."

Opportunities for Technology Applications

There are increasing opportunities for the application of technology to both formal and informal learning. The hardware, while confusing at times, is becoming increasingly available and financially accessible--thanks largely to a very competitive marketplace, by the way. The Internet, one of our government's most democratic creations, is experiencing user growth of 15 percent a month. Worldwide usage is projected to be a billion in just six more years.

The capabilities of NREN, when it becomes available, will offer even greater possibilities. A number of demonstration programs are underway in schools and school districts throughout the country.

The Library of Congress is both demonstrating new technologies and engaged in efforts to make information available electronically. Various departments and agencies of the federal government, including the National Agricultural Library and the National Library of Medicine, are rapidly making more valuable information available to the public.

Unique collaborative partnerships are possible, and the only limit is our imagination--where is Rod Serling when we need him? Imagine, for example, a team of geography, language, history, or science

teachers at a state electronic library forming a partnership with NASA in order to use full motion digitized graphics of the surface of the earth in the classroom. Imagine a similar partnership with the National Center for Atmospheric Research or one of the Department of Energy laboratories to teach science in the home or the school.

Even where there is such imagination in our community, problems still exist. Most schools do not have adequate computers and other hardware. Educational software development is moving ahead, but it is currently difficult to keep up with changes in the market in order to make decisions about the utility of the growing variety of programs.

Networking is hindered both by lack of connectivity and by prohibitive costs of line usage. Few schools have lines into individual classrooms. Teachers, students, and parents need training in the use of the technology and information about what is available. Users need information and experience with the technology in order to produce their own materials for classroom or in-home use. This can involve sophisticated reproduction equipment, scanners, and software programs.

Going Beyond Schools

An important point about this legislation is that it does not focuses exclusively on schools. State electronic libraries will be a resources for schools, businesses, and households. This legislation also seeks to build upon what we have already done, especially with Internet. And it is an attempt to position us to make use of what is to come.

It would allow for prototype projects that would pull together the hardware, software, and networking capabilities which do exist, publicize and demonstrate the possibilities, make training and information opportunities available, and also demonstrate current production capabilities.

I have devoted considerable time in Nebraska working to expand distance-learning opportunities and networking capabilities. I am very proud of what we have been able to do. I cannot recount all our efforts here today, but I can tell you that we have become experienced with distance-learning using two-way audio-video. We have produced award winning programs and courses that are taught in more than twenty other states. We have a project in which a number of small rural schools share a loop. We have more than 1000 teachers connected to Internet although they suffer from the burden of relatively expensive and difficult access to 800 lines.

I have also spent considerable time with hardware companies, software companies, and networking interests throughout the country. I know there are exciting and challenging materials available.

However, I have heard again and again the same complaints. The vision is not clear. It is hard to understand what is available now, much less what can be done in the future. The current technologies are confusing and, even though costs are dropping dramatically, there are still barriers to the purchase of equipment and software, much less services. Information and training are needed.

State electronic libraries will give communities the catalyst they need to get and keep things moving. Acting as a storer of information, producer of useful software, as well as a trainer of people, state electronic libraries will permit the community to accomplish a critical goal: making certain the technology serves people and not the other way around.

This legislation borrows heavily from an existing NSF program, the State Systemic Initiative (SSI). SSI is a model program for several reasons important in the technology field:

- it is a multiyear program;
- seeks to bring together many interests;
- it seeks to make system-wide change; and
- it seeks involve the business community, state and local governments, parents, educators, and students.

This legislation is a modest supplement to other efforts. I intend to support other legislation that will provide direct assistance to schools, libraries, and community-based facilities. It is my intent to support additional connectivity to Internet for K-12. It is my intent to support other efforts to develop electronic data resource and software. It is my intent to work to make live access universally available and affordable for every American school.

Human Values Should Determine Use

The most important element of this entire program is to make certain that human values determine use. Human beings were meant to be more than efficient shoppers and informed selectors of the latest game or entertainment choice. Communication technology should serve higher needs, too.

The worst thing we could do is to create a cult of technologists. Human spirit and soul cannot be digitized. As much as I believe we need to build state electronic libraries, I also believe we should bear in mind the advice of such skeptics as Neil Postman. I close my presentation with a few sentences from his essay in the November 1, 1992, *The Washington Post*:

> There is no technological solution to the problems of education in America. It is a

billion-dollar American delusion that the application of new technologies will make a significant difference, in the long run, to what happens in the classroom. All instructional technologies are only a means to an end. The problem we face is that the end is unclear to some, a matter of indifference to others, and contemptible to still others. If there is no clear purpose for education--acceptable to teachers, parents and children--schooling does not work. People must believe that education is worthwhile--indeed, that there culture is worthwhile--in order for school to have significant meaning. When citizens do not believe they have a culture worth preserving, their children are beset with sorrows including a lack of hope, conviction, trust and aspiration. They are, in a word, untouchable. When citizens believe they have a worthy culture (not just an economy), their children are not difficult to teach and will learn what they need to learn from available technologies.

All instructional technologies—new and old—are impotent machines unless we have some meaningful story to tell our children. It may be a story about their souls, or their minds, or their history, or their country, or even their planet. But it must be strong and romantic and inspiring. It must be capable of touching the heart and nerves, and it must explain who they are and why they are here and what is expected of them. And, of course, we who tell it must believe it. If we believe it, the children will believe it. If the children believe it, our problem is solved, and computers won't have a damn thing to do with it. ■

The Electronic Information Era: A Vision of the Future
Paradigms and Paradoxes

Robert C. Heterick, Jr.
President
EDUCOM

For half a millennium our society has been organized around a print paradigm. The development of movable type had the effect of democratizing information by creating an economical way for the average citizen to acquire information. The development of newsprint, the concept of serials, the invention of the offset press—all in some way expanded the scope of the paradigm.

The paper paradigm is groaning under the weight of exponentially increasing costs—for the acquisition of materials, for fulfillment, and for storage. The short-term consequence is that our nation's research libraries hold a smaller percentage of the world's scholarly information stock this year than they did last. The long-term prognosis is more of the same.

The New Digital Paradigm

In the last decade or two a new alternative to the print paradigm has been forming. This new paradigm is based on the confluence of a whole series of digital technologies. For most of the last several decades people have thought of themselves as in the recording business, or the computer business, or the film business. Increasingly, all these people have begun to realize that they are in the information business. The new digital paradigm seems likely to subsume the old paper paradigm.

Chief among the reasons for believing in a new digital paradigm is the phenomena of exponentially decreasing costs and exponentially increasing capability of the digital technologies. Each new generation of these technologies shortens the time-to-market and increases the leverage afforded by their use. One of the paradoxes accompanying early adoption of these technologies is failure to recognize that they require that we change the way we do business. Early adopters saw the technology as a way to cut costs of doing business the "old" way. It doesn't require many new generations of the technology to realize that using it as a substitute for the "old" way misses the fundamental nature of the paradigm shift and requires us to engage in "re-engineering" to fully capture the potential of the technology.

The computer and communications technologies have been characterized by very rapid diffusion rates. In fact, it seems safe to observe that whatever the technological merits of a particular innovation, if it doesn't demonstrate rapid diffusion and acceptance, it is most unlikely to ever capture a meaningful market share. Standards efforts that consume lengthy periods of debates will likely consign the object of their attention to the dust bin of history. ISDN may be an object in case.

Successful Applications of Technologies

Only telephony of our current technologies (and that was analog at its introduction) has failed to demonstrate the very, very high diffusion rates that have characterized such technologies as TV, VCRs, and radio. I suspect the reason for this is primarily related to the fact that, at the introduction of the telephone, it was a mediated service. One had to use the facilities of a human mediator to employ the technology. Digital technologies that are disintermediated will experience much more rapid diffusion rates. That thought carries with it a disquieting message for institutions of higher education and libraries that are built on the mediator model. It suggests that we will need to move the human mediation away from the user interface.

In addition to being diffuse and disintermediated, successful applications of technology will need to be highly differentiated or they will be consigned to niche markets. Particularly in the information dissemination segments of our society, the print paradigm has encouraged the development of significantly undifferentiated services. Many of our information intensive organizations, libraries and educational institutions being two prime examples, are built around a one-size-fits-all model.

The agriculture revolution provided humankind with a leverage of about 100 through attention to fertilization and the development of the plow. During the agriculture revolution the driving force of society was human labor and the measure of wealth was land. The industrial revolution provided a leverage of about 1,000, occasioned by the harnessing of steam power. The driving force of society was capital, and the measure of wealth was artifacts—refrigerators, autos, etc. The information revolution provides a leverage of more than one million in computing and an additional million in communications. This billion-fold leverage will change society in ways far more dramatic than either the agriculture or industrial revolutions. During the information revolution, knowledge will be the driving force of society and access (to that knowledge) will be the measure of wealth.

Libraries, to the extent they can shed the mantle of compromises developed under the print paradigm, will play the pivotal role in the new revolution. ■

Competition and Cost Concerns: Information as a Commodity—Fee vs Free

Barbara Evans Markuson
Executive Director
Indiana Cooperative Library Services Authority

This panel addresses a compelling issue. Confronting us as a society is the ongoing formulation of public policies that protect and advance our public goals of free access and our private goals of economic benefit from information investments.

All of us would probably agree that this issue is becoming increasingly complex. Furthermore, this increasing complexity makes it difficult even for experts to comprehend completely. Many of our traditional methods for policy formulation are challenged by an environment characterized by rapid changes in economic policies and an equally rapidly changing information technology.

These are not merely policy issues of interest at the Federal level; communities, states, and regions are, on a smaller scale, attempting to deal with these same issues: Who should provide the information networks? Who should provide the mechanisms for distributing statewide education? If a commercial provider begins to offer an information service now being offered by a public entity, who is the competitor?

One library has a board that absolutely forbids charging users for any online database services; another has a board that wants users to be charged for basic telephone reference service.

Establishing the Ground Rules

In such an environment, perhaps we should concentrate first on achieving consensus on how we will conduct the debate and on some general ground rules.

Ground Rule 1: The difference between fee and free is the "r" for resources. There is no free information. We must focus more on who is providing the resources that generate the information, who is providing the resources that disseminate the information, who is providing the resources that makes it available to the end user, and how much money, time, and effort we expect the end user to invest. How often should a taxpayer have to pay to use information that tax money subsidized in the first place? How many users can access a commercial database under, say, a license to a publicly supported library, before the vendor's market erodes?

Ground Rule 2: We need to rid ourselves of the myths about who adds value to information. It seems clear to me that even a cursory review of this issue eliminates all claims to exclusivity. Both public and private sectors support mechanisms that add value to the information.

Ground Rule 3: In a truly open information society; we need all sectors to be strong and, perhaps, even to be competitive. We should want information checks and balances.

- Private sector information as a check on the government;
- Government sector information as a check on private information;
- Nonprofit sector as a check on both; and
- The individuals ability to compare and select among these, and personal sources, as a check against all three.

Ground Rule 4: All information sectors should play a constructive role in ensuring that we never rely solely on fee-based services for any information that we want every citizen to know—for example, information about AIDS, basic health care, etc.

Ground Rule 5: If information is a commodity of increasing importance to our society, then we must develop a more precise vocabulary for dealing with this commodity. Surely we can come up with a better vocabulary to discuss what we intend as policies for information as diverse as third grade readers,

government-subsidized contract reports, novels, and access to the Library of Congress online catalog.

Ground Rule 6: We must focus on long-range as well as short-range information goals. We need to evolve the concept of information ecology that recognizes the social cost of preserving as well as creating information. Libraries are faced with becoming the information dumps of the future with an increasing variety of formats to contend with and a paucity of research and resources to ensure long-term retrieval and access—whether for fee or free.

Ground Rule 7: We need to expand information policy agendas to deal with more types of explosions. The technology and information explosion get lots of time; we deal less with the ignorance explosion. Those who are most disadvantaged by the design of information delivery and, especially by fee-based services, are rarely represented in equal numbers at information policy discussions. In a society whose leaders believe that information is power perhaps information stamps should be as important as food stamps.

Ground Rule 8: Information is an economic and knowledge asset only if it connects with users. The ability of users to maximize this asset depends on formulation of policies that focus as much on the end user as on the producer. One example of this discontinuity is that governments generate, purchase, and subsidize much information but then set budget policies that limit access and erode library and information services.

Ground Rule 9: Public institutions, at all levels, are important risk takers in development of information services. Attempts to stifle government innovation, and development in information are misguided. In the library field, it can be easily demonstrated that private industry invested largely after nonprofit and tax-supported institutions demonstrated the viability of automated library and information services. With respect to information access and delivery, we need to maximize the return on investments from all sectors.

Ground Rule 10: Fee vs. free has dozens of connotations. One aspect is recovery of funds from selling government information. In my own view this has limited merit unless government agencies have some of the opportunities offered nonprofit and private agencies to retain certain funds from increased efficiency in providing specialized services otherwise not available. The continuing debate surrounding the Library of Congress legislation to update and modernize the conditions under which it can do this has brought attacks from the library field and the information industry, largely unfounded and misguided in my opinion.

Ground Rule 11: All of us see ourselves at a particularly disadvantaged point on the information food chain. This Forum gives us a chance to get other perspectives. The Forum planners have again given us experts from diverse backgrounds to challenge us with compelling views on these important issues.

And finally, to paraphrase Don Swanson, "the goal of federal information policy should be to do as little damage as possible." ■

User Needs: Pricing of Federal Electronic Information Products and Services

James Packard Love
Director
Taxpayer Assets Project
Center for Study of Responsive Law

The controversy over the Library of Congress's user fee proposal highlights more than a decade of disarray in federal policy over the pricing of information disseminated in electronic formats. Some agency information services and products are accessible at no charge, while others are available for at prices that bear little relationship to the costs of dissemination.

This panel was asked to discuss the pricing issue in terms of "fee versus free", but this dichotomy hardly describes the nature of the problem. Clearly the federal government has a responsibility to provide public access to a great deal of information at no charge, and just as clearly, the public interest is served by allowing agencies to charge fees for some information products and services. The debate is really about which information products and services should be free, and what types of prices are appropriate for those products and services that are not free.

OMB's Circular A-130

OMB has tried several times to address the pricing issue in its Circular A-130. The December 12, 1985 version of A-130 urged agencies to charge user fees in accordance with OMB Circular A-25, when "appropriate". In the discussion of user fees the Circular points out:

The requirement to establish user charges is not, however, intended to make the ability to pay the sole criteria for determining whether the public receives government information... If an agency has a positive obligation to place a given product or service in the hands of certainspecific groups or members of the public and also determines that user charges will constitute a significant barrier to discharging this obligation, the agency may have grounds for reducing or eliminating its user charges for the product or service, or for exempting some recipients from the charge.

In January 4, 1989 OMB proposed a number of revisions in A-130. On the subject of user fees, OMB would have directed agencies to charge user costs for information products that were limited to the costs of dissemination, and excluding collection and information processing charges, except where:

- Statutory requirements are at variance with the policy;
- Where the agency collects and processes, as well as disseminates, the information for the benefit of a specific identifiable group beyond the benefit to the general public; or
- Where the agency has made a determination that user charges at full cost of dissemination constitute a significant barrier to properly performing the agency's functions and reaching the public whom the agency has an obligation to reach.

The second exception to the general rule would allow an agency to charge fees higher than dissemination costs in limited cases where the information is produced for "a specific identifiable group" and the information would not benefit the "general public". This exception was designed to address the current practice of the Bureau of the Census, which receives funding from industry groups to expand certain surveys.

The third exception would allow agencies to disseminate information for free or below dissemination costs when the prices would constitute "significant" barriers to the public that the agency had obligations to reach.

The January 1989 proposal was withdrawn by OMB on June 9, 1989, following a storm of criticism directed to the sections of the Circular which would have discouraged agencies from providing value added

services to individuals, in favor of "wholesale" dissemination systems that serve private data vendors. In withdrawing the proposed revisions, however, OMB reiterated its support for restrictions on the prices that agencies could charge for information products and services.

The January 1989 notice suggested a change in user charges policy as compared with the existing policy found in OMB Circular No. A-25, User Charges. The change consisted of treating government information products as fundamentally different from other goods and services. OMB proposed a ceiling on charges for information products, asserting that, with relatively rare exception, user charges for government information products should never be set higher than a level sufficient to recover the costs of disseminating, not collecting the information. The proposed policy, therefore, would generally preclude user charges that might attempt to recover costs of collecting and processing the information, and would preclude using other standards such as the market value of the information.

OMB intended to reassure the public that prices would not be raised above the costs of dissemination. In effect, agencies would be precluded from using information products asa profit center or budgeting mechanism.

In 1992 OMB recommended again that A-130 limit the prices for information products and services to the costs of dissemination. (These revisions were adopted on June 25, 1993.)

While the OMB statements on the pricing of information products and services have been welcome, there are no mechanisms for enforcement, and in light of the widely divergent pricing practices employed by agencies, it is difficult to describe them as particularly relevant.

In the latest revisions to A-130, OMB gives executive branch agencies a green light to ignore Title 44 when disseminating information in electronic formats. This allows agencies to prevent their electronic products and services from entering the GPO sales program, where prices would be limited by Title 44, which sets prices at 150 percent of the cost of dissemination.

Most agencies that manage their own sales programs for electronic information products and services do not have any statutory limits on the prices that they charge. Since an OMB Circular is simply an advisory, citizens do not have a legal basis to challenge prices that exceed dissemination costs. Perhaps the most important omission of the Circular was the absence of any discussion of the National Technical Information Service (NTIS) in the disseminate of agency information.

NTIS Pricing Policies

NTIS controls dissemination of a very large product line of federal electronic information products and services, and it charges prices that are often outrageous. In many cases NTIS enters into contracts with agencies giving NTIS exclusive rights to sell the agency information. These contracts sometimes provide agencies with financial incentives, such as shares of sales revenue. Thus, even if an agency felt bound by the A-130 pricing provisions, NTIS provides a simple and increasingly popular loophole.

To illustrate the nature of the problem, consider three data sets sold by the Environmental Protection Agency through NTIS, which are used by citizen groups to monitor company compliance with environmental laws. EPA's Civil Enforcement Docket, which fits on just two floppy disks, is sold by NTIS for $360 -- about the cost of a new color TV and VCR. NTIS charges $2,360 for the EPA's Facilities Index System (FINDS) file on magnetic tape. The NTIS price for a single copy of the EPA Resource Conservation and Recovery Information System (RCRIS) Extract tape is $2,800, a price roughly equal to cost of a 486 desktop computer complete with 250 megabytes of disk storage, eight megabytes of RAM, a high quality non-interlaced super VGA monitor and a CD-ROM reader.

Researchers who want access to time-series data face even larger barriers. Ten years of Federal Reserve quarterly "bank call" reports, which contain information used to study the cause of bank failures, are sold by NTIS for more than $20,000 -- more than the price of 13,300 copies of the *Congressional Record*, or 690 copies of the *Statistical Abstract of the United States*, sold in paper formats.

The problems with NTIS are fundamental to the agency. When the Congress and the Executive Branch decided to make NTIS into a self supported agency that has a responsibility to disseminate large classes of low volume and unprofitable paper and microfiche publications, it became necessary for the agency to earn significant profits on other products. NTIS recognized early the high market value of many government computer databases, particularly those databases which are of interest to industry groups. Thus, the EPA data sets described above are priced as though the relevant audience are the companies regulated by EPA, rather the citizens who monitor industry compliance with EPA regulations, and the "bank call" reports are priced for an audience which is limited to a handful of large financial institutions, rather than academic or citizen groups who study and monitor federal banking practices.

While NTIS is expected to break even on its overall product line, it has no bounds on the prices that it charges for particular data sets, and it uses electronic records to subsidize its low volume microfiche and paper products which lose money. The NTIS revenue sharing agreements provide other federal agencies incentives to use NTIS rather than GPO or the National Archives and Record Administration (NARA), which charges fees based upon dissemination costs, or to avoid releasing the records under the Freedom of Information Act (FOIA), which also limits fees to dissemination costs.

In today's fiscal environment it will be difficult to address the problems of NTIS pricing, but unless something is done, this agency which was created to broaden public access to federal information will likely become an even more important barrier to access.

Pricing Rules

Assuming that the problems with NTIS are resolved, policy makers are faced with a number of choices regarding pricing policies. The Information Industry Association (IIA) has long promoted a single price policy. Under the term "equal" access, the vendors want to prohibit government pricing differentials between commercial and non-commercial users. However, the companies which make up the IIA aggressively pursue highly discriminatory pricing schedules. Lexis, Westlaw, Dialog, and other vendors offer different rates for academic users, and a complex set of pricing policies for government, business, and individual users.

The government also has a long tradition of offering special discounts on information products and services to non-commercial users. The Freedom of Information Act (FOIA) provides for fee waivers or reduced fees for non-commercial users, Title 44 provides for free distribution of information products through the Federal Depository Library, including products offered through the new GPO Access program.

The Securities and Exchange Commission's (SEC's) EDGAR system will provide free online services to users of reading room terminals, and also free use for the SEC regulated exchanges. The Bureau of the Census provides certain state and local government agencies with free access to its databases. Thus, it is hardly novel for agencies to offer free or discounted access to certain users, as is provided for under OMB's A-130.

There are also other ways to segment markets. Vendors and government agencies often offer different prices for online services depending upon the time of the day. The Department of Commerce Economic Bulletin Board (EBB) and the National Library of Medicine's MEDLARS service offer considerable discounts on off peak hours. Dialog offers special low rates on certain off peak use.

Pricing policies which offer discounts to non-commercial users are often consistent with economic efficiency, and do not necessarily involve cross subsidies. Information products and subsidies involve large economies of scale, with high fixed costs and low marginal costs. As a result, a single price competitive market does not lead to marginal cost pricing. Prices high enough to cover average costs discourage many potential users who value of the product or service higher than the marginal costs of production. Pricing structures which offer discounts to non-commercial users provide mechanisms to eliminate this important inefficiency.

Cross Subsidies

Would government discounts to non-commercial users result in cross subsidies? In fact, discounts to non-commercial users can benefit commercial users, so long as the non-commercial users pay fees that exceed the incremental cost of providing the product or service, and the prices overall are limited to the recovery of total costs. According to definitions developed by some economists for multiproduct common carrier products, no cross subsidies occur unless a user group pays more than the "stand-alone" cost or less than the "incremental" cost of its service.

In a pricing scheme that limits revenues to total costs, the economically efficient allocation of the fixed costs between user groups depends upon the relative elasticities of demand. If commercial users have a higher willingness to pay than non-commercial user, the economically efficient price, sometimes referred to as the "Ramsey" price, would be higher for the commercial users than the non-commercial users.

Peak Load pricing of online services provides another mechanism that will increase efficiency will benefit many non-commercial users. Since the fixed costs of an online system are related to the number of concurrent users that the system will report, it is efficient to shift demands to off peak hours. Many commercial users are willing to pay the higher peak load prices for access during normal business hours, while many individuals and other non-commercial users can benefit from lower cost access in the evenings and weekends. This approach also allows a simple mechanism to segment markets, without intrusive government "tests" regarding the qualifications of the users for the lower rates.

Prices for public access to government information systems should also depend upon the reasons for the creation of the system. Information systems that are

created principally for an agency use should only require the public to pay the "incremental" costs of access. Given the high fixed costs of most online systems, this rule should lead to low rates for public access to a wide range of information systems, such as the Justice Department JURIS system, the SEC EDGAR system, and the House of Representatives LEGIS system. ■

Information Policy: The State's Role

Senator Richard J. Varn
Iowa State Legislature

Count me among those who extol the virtues of the use of information technology in improving government. And count me among those who extol it until all but the most devoted policy maker runs screaming from the room. However, advocates should be willing to join with skeptics and rationally assess the promise and the problems of the use of such technology to achieve an "electronic democracy."

The phrase electronic democracy is employed to describe many distinct uses of information technology in government. These uses can be categorized as follows: increasing citizen participation, improving access to government information, improving access to government services, streamlining government operations, and restructuring government. These distinct uses have distinct promise and problems and should be analyzed separately before considering electronic democracy as a whole.

Increasing Citizen Participation

The promise is that the average citizen will provide more input and have a greater impact on the decisions of government. Through electronic town hall meetings, call-in programs, electronic mail and bulletin boards, and instant feedback mechanisms, government officials can know more clearly what their constituents want. They can talk directly with more constituents about problems and the pros and cons of various solutions. They can use these opportunities to build consensus about solutions to politically difficult problems. Citizens will see the impact of their participation and feel ownership in the solutions chosen. Participation in the political process will increase. Government will be closer to the people.

Many practical problems exist in such a system. Even the most conscientious policy makers can only read or listen to input from a small percentage of their constituents. Not everyone can have a turn on camera in the town meeting. In fact, most people do not have the time, interest, or patience for the grind of policy discussion.

Some also wonder whether electronic democracy would encroach on some of the fundamental principles of our government. Tolerance of the rights of the minority and fear of government power are among the reasons we have a slow-by-design republic and not an instant feedback democracy. Would electronic democracy accelerate the trend toward eager-to-please politicians and away from leaders who exercise independent judgement?

Not all historically validated sound public policy would stand up under the intense light of electronic democracy. President Harry S. Truman's order to desegregate the military is one such example. Instant knowledge of decision makers actions with the opportunity for instant feedback from angry constituents would necessitate backbone implants for many of our politicians before tough but necessary decisions would get made.

The potential for interest groups to make mischief in electronic democracy is evident to anyone who has sat through a stacked public hearing or waded through piles of form letters. Stacking the deck in an electronic democracy would be just as easy. In fact, since physical appearance matters a lot on televisions why not hire focus group-tested constituents to plead your groups' case in electronic town meetings much as a cosmetics company picks a spokesmodel?

Political mischief, of course, runs both ways. Policy makers as well as interest groups will ratchet up their sophistication in manipulating the perceptions of their actions. Databases of information on constituents can be used to target information and manipulate opinions. How about transmitting computer

simulations directly to constituents to sell political ideas as Michael Jackson uses it to sell music videos? Or how about digitally enhancing a politicians physical appearance? ("Mr. Nixon, sir, you look a little pale, unshaven, and sweaty. Let me adjust that for you.")

Call-in shows, while susceptible to planted callers, are generally not under the control of the politician. They do demonstrate the pitfalls of having persons more interested in controversy and ratings than in what is best for the polity in the short and long run. The agendas of such shows are only a small piece of the business of government. After all, a lot of the decisions of government, even the important ones, are pretty boring. The listeners for these shows more often listen to have their world view validated, or to get their daily adrenaline rush to give informed consideration to public issues.

Greater citizen participation in government through use of information technology increases our need for leaders who can stand up and take the heat and for a more sophisticated electorate that does not rush to judgment. Politics often looks like a choice between extremes. In part, this is because of marketing, but it is also because zealots, extremists, and the financially interested are motivated to participate and help shape the agenda. Information technology can make participation easier for the less motivated, but will they take advantage of it to balance off the other forces? Yes, information technology can give average citizens a chance to have their say. It still remains to be seen if they will say it and if anyone will listen.

Improving Access to Government Information

The promise is that electronic access to government information will allow citizens and the press to be better informed about what the government is doing. Information relevant to various issues of importance will be readily available, leading to a more informed citizenry that is better able to play its role in our political system. The piles of useful information that government spends our tax dollars to collect and create will be available to all who need it, when they need it. Improved electronic access to government information will also mean that policy makers have access to the information they need to make decisions.

Of course, the promise of electronic access is plagued by the problems of privacy, data security and protection, lack of availability of the needed hardware and software for the public user, cost, inconsistent data formats, a patchwork of pricing schemes, absence of metadata, and lack of expert support for the public user. But more fundamental than those problems is that government collects and saves far more information than even it needs, this information is often redundant, and it is of no interest to anyone. Instead of collecting only the information needed and the using it numerous times, government tends to collect information numerous times and then never use it again.

As any reference librarian will tell you, people do not simply seek information from government, they seek knowledge they can apply to a particular problem or a synthesized answer to their question. This applies to policy makers as well. Ways to get such meaningful electronic access to government information are being negotiated and discussed across the nation, often with libraries and information industry interests taking the lead. In many cases, how to get such access is still being invented. For example, there are plans for creating a national spatial data infrastructure.

The likelihood that improved electronic access will fulfill its promise, in part, depends on these negotiated and new efforts to ensure meaningful access. But ultimately, it depends upon a diligent press, library community, information industry, and involved citizenry that will insist on fair and meaningful access to government information resources.

Improving Access to Government Services, Streamlining Government Services, and Restructuring Government

Recently, an information policy paper was released by a group known as the State Information Policy Consortium, which consists of representatives of the National Conference of State Legislatures, the National Governors' Association, and the Council of State Governments. In this paper, the Consortium outlined its vision for the use of information technology in government, including one-stop shopping for government services and having any point of presence of government be a point of presence of all levels of government. This would be accomplished in part by cross training and in larger part by interactive information technology.

The promise is that government services would be delivered when and where the customer wants them and that all levels of government would work together to coordinate and pay for the delivery system. Customers would be able to get services over the phone, through the mail, through kiosks, via computer and modem, and in the home through interactive video and computer. The cost of government would be reduced and the service improved.

Obviously, this proposal makes too much sense for government to do it without being forced into it by crisis. Bureaucratic inertia, parochialism, and turf protection aside, regular folks often defend government

against such change because they feel they have some measure of control over it or assurance of responsiveness that would be lost by the change.

Without the credible threat of customers being able to bypass the level of government that does not serve their needs, there is no penalty for refusal to change. Without top-to-bottom leadership and vision at all levels of government that commits resources to such a change and still assures local or regional control over local or regional policy, such coordinated delivery will not occur.

Each level of government may on its own pursue the promise of improved service delivery through information technology, although the cost, when not shared, becomes more of an obstacle. The cost is one reason libraries have not moved forward. This cost problem can be exacerbated by governments tendency to simply add a new layer of service and not eliminate the redundant system, the savings from which could finance the new. Yet, in a truly customer-driven system, the technophobic may want you to keep that redundant system, further driving up the cost of change.

Conclusion

Its obviously easy to set up and knock down straw ideals of the different aspects of electronic democracy. Policy makers often wish for technological fixes for problems that are painless and easy, but no one should think electronic democracy is such a fix. With eyes open, one can see that electronic democracy offers great promise for making our government better, a lifetime of challenges for policy makers, and a bumper crop of headaches and rewards for administrators. The greatest challenge of electronic democracy is the vast scope and scale of changes the collective pieces and their interaction bring upon us. The most critical variable that will affect our ability to meet this challenge is whether the various levels and parts of government will work together to make electronic democracy work. ■

Intellectual Property: Introduction, Overview, and User Needs

William W. Ellis
Associate Librarian for Science and Technology Information
Library of Congress

As Associate Librarian for Science and Technology Information at the Library of Congress, I have seen a great many portents of the future. What is about to happen in the application of rapidly developing information technology to scientific and technical materials certainly will be sensational, but the nature of the sensation is unclear. Some have forecast the demise of the standard technical journal article as new formats for dissemination are devised. Some anticipate that materials will be made far more widely available, while others predict an intensification of problems of access to information. Some believe that great changes will result in the way that science and technology are conducted, while others say that what happens in workshops and laboratories will be about the same.

But whatever the future of scientific and technical information, as well as other kinds of information, the issue of intellectual property rights is a central part of what must be addressed in walking into the uncertain future. Indeed, the ways in which these issues are addressed may have a profound effect on future developments.

With that in mind, let me make a couple of brief remarks about apparent perceived user needs. Some focal points are now emerging. In a fundamental way many want access to everything, from everywhere, and free to the end user or at the lowest possible cost. Senator Kerrey noted the potential significant democratizing influence of thrusts in this direction and also suggested an opposite potential stultifying effect of unguided availability of massive entertaining but not edifying electronic information. There is also a growing call to rethink search technologies. The rapidly growing body of electronically available information is already overwhelming to many of us, and what is one person's winning sweepstakes ticket is another's junk mail. So it is quite likely that search strategies will have to be tailored to the perceived needs of specific categories of users if users are to be well served. And, of course, one of the many imponderables in this is how the basic units of information will change as ways that we order and search them evolve.

In the rapidly evolving era of electronic information, many users appear to want low-cost or no-cost access to everything in a way that they can find what they need and arranged so that it makes sense to them and can be easily used. This is a challenge to existing arrangements for the administration and compensation of intellectual property rights. ■

Intellectual Property: The Government Perspective— Government's Role in Striking a Balance in the Public Interest

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Copyright Office
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My task is to comment on the government's role in striking a balance among the interests represented by the earlier speakers in order to adopt the appropriate policies for the benefit of the public at large. This is the usual role of government in the United States, but when the issues involve copyright policy and dissemination of information, the balancing task becomes formidable.

A symposium like this is important because it provides a Forum for a dialogue among the relevant groups. I don't come with a series of concrete solutions. I can only contribute a few thoughts and observations for future discussion and consideration about the nature of the problem and possible solutions.

Discussion

Copyright is designed to encourage creation and also to maximize the public availability of literary, artistic, and musical works.[1] Traditionally, courts have been circumspect in construing the scope of intellectual property rights when new technologies alter markets and raise new competing interests.[2]

Today we ask: What is the proper role for the government and intellectual property in the electronic information age? Publishing costs are increasing while copying costs are decreasing. Electronic media provide superior search and access capability, and ease of copying. But since access occurs frequently either in the home or in private, significant privacy rights affect monitoring access to works.[3]

The fair use provision, in section 107 of the Copyright Act, provides an outlet that reduces the inherent tensions between owners and users.[4] Certain societally favored uses receive a broader fair use license. The favored activities include: criticism, comment, news reporting, teaching, scholarship and research, and other noncommercial uses.[5]

The four fair use factors are apparently of nearly equal weight, although the Supreme Court has stated that the "last factor—the effect on marketability—is undoubtedly the single most important element of fair use."[6]

There is generally a broader fair use privilege to use factual works than fictitious ones.[7] The public interest in broad dissemination of information is a significant factor in the fair use calculus.[8]

Whether new technologies, such as electronic on-demand publishing, actually intensify the fair use conflict is not clear. Experts differ.[9] The fair use analysis applied to computer networks should be similar to that used with other methods of verbatim copying. The difference, if any, is of degree and not kind; networks and on-line publishing provide for easy access and reproduction, as do photocopying machines and audio and video cassette recorders, and there are similar privacy issues involved in regulating any form of home or private copying.

Several solutions to the proprietary rights/public interest conflict have been suggested: exemptions for private use; exemptions coupled with compulsory licenses; blanket licenses; governmental or private clearinghouses; encouragement of negotiated guidelines; alternative pricing; surcharges on equipment; or other special royalty schemes for new technologies.[10] Anti-copying systems, which potentially alter the quality of technical advances, may provide partial solutions, to the extent they are not defeated by other technology. Some, but not all, of these solutions require legislation. For legislation in this field to succeed, we need to build a substantial consensus among the groups most affected by the proposal.

The government's balancing role is most evident in crafting legislative solutions. In this country, all copyright legislation stems from the constitutional authority of Congress to legislate exclusive rights for authors in order to promote the progress of science and the useful arts. All copyright legislation is judged by its

ability to pass muster under this constitutional standard. Its purpose is to stimulate creativity and encourage dissemination of new works for the benefit of the entire society. Of course, it is one thing to reiterate the general standard; the difficulties arise in applying the standard to specific solutions and specific activities.

Copyright is alive and relevant in the electronic information age. While an earlier technological revolution, the printing press, gave birth to copyright, its theories, concepts, and system of intellectual property protection remain viable today and for the foreseeable future.

The fundamental issue is this: What legal regime will stimulate the optimum quantity and quality of new works while facilitating their wide dissemination at reasonable cost to the public? Works are not created in a vacuum. They are rarely created without substantial financial support either at the point of inspiration or marketing. Who or what will provide that financial support? Historically governments sometimes have resorted to public patronage or subsidies to encourage creation. For at least the last 200 years, copyright law has provided a better answer—a better mechanism to enable creativity to flourish and get creative products into the hands and minds of the public.

Is copyright obsolete? No, the essence of copyright is appropriate protection for the fruits of intellectual creativity as expressed in works of art, literature, music, and information. Copyright doesn't protect only printed books; it protects the particular way in which an author expresses himself or herself. Clearly, that protection can be available for electronic means of expression and distribution.

In the end, we will probably adopt several solutions. Publishers may resort to anti-copying technology. Publishers and their library clients may agree to assess a copyright fee the amount of which reflects an adjustment for fair use copying—to be paid by the ultimate user. Centralized clearance mechanisms will sometimes provide the avenue for copying and payment of copyright fees; again, the fees could account for the fair use factor. Fair use guidelines could be negotiated and agreed upon among representatives of authors, publishers, and librarians. New blanket licensing arrangements could be developed. Finally, depending upon the success or failure of these former solutions, legislation may be necessary to establish a fair use haven for limited kinds of copying or for other specific exemptions. ■

Notes

1 See *Harper & Row v. Nation Enterprises*, 471 U.S. 539, 545 (1985); *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975).

2 See *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 431 (1983).

3 See *Stanley v. Georgia*, 394 U.S. 557, 564-65 (1969) (right to be free of unwarranted intrusion into privacy of one's home).

4 See 17 U.S.C. 107.

5 Id.

6 *Harper & Row*, 471 U.S. at 566.

7 See *Harper & Row*, 471 U.S. at 563 (copyright law recognizes a "greater need to disseminate factual works than works of fiction or fantasy").

8 *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 431 (1983) (consumer access to information and new technology are important interests that must be considered in striking a public interest balance).

9 Compare Note, *Toward a Unified Theory of Copyright Infringement for an Advanced Technological Era*, 96 *Harvard Law Review*, 450 (1982), at 462-63 (fair use does not fit well when applied to so-called "second-order" technologies) with A. Marsh, *Fair Use and New Technology: The Appropriate Standards to Apply*, 5 *Cardozo Law Review*, 635 (1984), at 658 (section 107 flexible enough to incorporate new technologies) and S. Timberg, *A Modernized Fair Usage Code for the Electronic as well as the Gutenberg Age*, 75 *New York University Law Review*, 193 (1980), at 197-99 (problems with more recent technology continues issues raised with phonograph and radio).

10 Marsh, supra note 5, at 681-82.

Information Initiatives: Electronic Libraries of the Future— Implications for Federal Libraries

Robert Wedgeworth
Interim University Librarian
University of Illinois

Although I have flirted with the federal library community over the years of my involvement with ALA and service on outside committees of the National Library of Medicine and the Library of Congress, this is the first time you have asked for my hand, and I am flattered.

It may be presumptuous of me to even consider the possibilities of a long term relationship, nevertheless, I have brought to this engagement something old, something new, something borrowed and a little blues.

My theme is an old one, for over the years I have tried to focus on the topic of libraries of the future in terms of who benefits? Who Governs? And, who pays?

What is new is my voice from the heartland representing one of the nation's largest research libraries and their concerns for the future. In developing these themes I have borrowed heavily from many thoughtful contributors to the literature and from those who have critiqued it.

The blues is what we are singing currently as we try to match our ambitions for the future fueled by increasing demands from our constituents with the dampening effect of limited resources from our traditional sponsors, state government.

The federal government's role in the electronic information era will flow from and to the kind of community of which I am now a part. Just as the federal interstate highway system had its greatest impact on connecting rural and suburban communities, the wiring of America will dramatically expand communications capabilities of areas like East Central Illinois where I now live. Much of what our constituents will want on the new networks will be from federal sources. Their access node will be the university library.

Our university library which has a library faculty of just over 100 plus support staff of around 400 serves a student community of 35,000. Over 7,000 faculty work at the university teaching and doing research in a library environment that at 15 million items is about 10% the size of the Library of Congress although it is the 3rd largest university research library in the country.

As one of the earliest entrants to the electronic age, the University of Illinois is a major lending library to the nation since such a large percentage of our collection is accessible on our online catalog. That catalog is accessible to every academic librarian in the state. For those outside Illinois it is available on Internet and OCLC.

Like many sister institutions we are trying to develop into a reality the promise of electronic access to many types of materials. Indexes and current contents of major journals are available over the campus network which connects all units including the dormitories as of this spring.

What's in Our Electronic Future?

Access Services - On site and remote access to information resources including surrogates, full texts and data sets.

Document Delivery - Rapid access to copies of documents for research and study via interlibrary delivery and authorized reproduction services.

File Creation and Preservation - Ephemeral and research materials on poor quality paper and rare items for which the content is of primary interest will be scanned to create electronic files.

Education - We cannot assume that most users will understand or know how to exploit these new capabilities. As a university library we have a strong mandate to educate and train users.

Up until the 1980's when over 60% of the university's budget originated from the state's budget allocation we could count on being able to finance these developments. Currently only 40% of the university's budget comes from the state's allocation, the balance is made up from federal and private research grants, gifts and the university endowment. Increasingly, public

and private universities are competing for the same sources of funding including state subsidies. Since most information products and services in electronic formats are in addition to what we already support, the competition for the library research dollar is fierce. As a principal funding source, the state has a dominant influence on university policy. But as funding sources diversify, the driving forces become diffused as well. When states openly encourage the solicitation of other funds to supplement budgets it offers to share the governance of state institutions with those funding sources.

In its 1988 summary on federal information dissemination in an electronic age, the Office of Technology Assessment made a compelling point for federal information policy in noting:

"At the most basic level, a fundamental cross-cutting issue is public access to Federal information. Debate over the use of electronic formats, privatization, and the like is obscuring the commitment of Congress, as expressed in numerous laws, to the importance of Federal information and its dissemination in carrying out agency missions, and the principles of democracy and open government.

This statement can easily be repeated with respect to our state legislature, but Federal policy is the kingpin.

Federal libraries enjoy the advantage of sharing the mission of its agency to disseminate information. In the confusion over how to do it in the electronic formats, we are losing sight of what we should be doing. Other than the Library of Congress and the National Library of Medicine and, to a lesser extent, National Agricultural Library, most librarians and even fewer members of the general public do not know what is available from federal agencies. The developmental efforts involved in the creation of new information products and services almost demands a federal library and information center to help stimulate the move toward providing a greater access to agency information resources.

What we need is not fifty new and exciting databases or data sets from federal agencies but a more general source that will enable users to access the information of many of the smaller agencies just as we use DIALOG or other collective sources to provide access to many specialized fields. We will not object strenuously to paying distribution costs but we do not see the justification for duplicating those costs for every federal information source. For most libraries, government information will continue to be a valuable source for the student research and teaching.

As we develop advice to Congress that addresses these issues we should recall OTA's advice:

Congress has the opportunity to establish a strategic direction for electronic dissemination of legislative branch information. The importance of congressional information ... and the need to ensure equitable channels of access ... are widely accepted in principle. The differences of opinion focus on means of implementation. ■

Emerging Roles and Responsibilities for the Federal Library and Information Professional in the Electronic Era

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The principal product of government is information — so, in fact, is its raw material. If we accept this premise, then it follows that if we alter significantly the ways in which information is acquired, shared and used, then the activities of government cannot, as a consequence, escape being transformed. As a corollary, the roles of those who carry out those activities must also change.

We already have sufficient evidence to demonstrate that information handling technologies have markedly altered many enterprises and transformed the roles and functions of those who staff them. For example, they have flattened organizational structures, changed the locus of responsibility for decision-making within organizations and created new organizational structures such as the virtual corporation.[1] Libraries and librarians have clearly also been affected. The way libraries are used, run and managed have undergone remarkable changes. The functions performed by librarians, the skills required to perform those functions and the roles they play in the institutions their libraries serve are also undergoing noteworthy changes. However, it is to Federal librarians that modern technologies may afford the greatest opportunity for an enlargement and enrichment of their roles. Modern technologies afford them opportunities to be more intimately involved in the activities of their organizations than has ever been possible. They have a singular opportunity to lead the bureaucracies that employ them to understand how the increasingly rich array of information resources can be exploited in the interests of effective and efficient operations, and also to be instrumental in achieving those goals.

Federal Government and Information Technologies

The Federal government is the world's largest user of information technology. In this fiscal year, expenditures for information technology account for nearly 6% of the total Federal operating budget (figure 1). The amount allocated for information technology has increased more than 150% in the past 10 years (figure 2). This suggests that there has been extensive penetration of electronic technologies into the operations and activities of government, which in turn means that the product of government activity is increasingly often some form of electronic information. Activities that formerly resulted in typewritten tabulations of data or notes made in files kept in cabinets in government offices now frequently result in entries in machine read able data bases—that is, information that can be readily communicated, disseminated, shared, and reused.

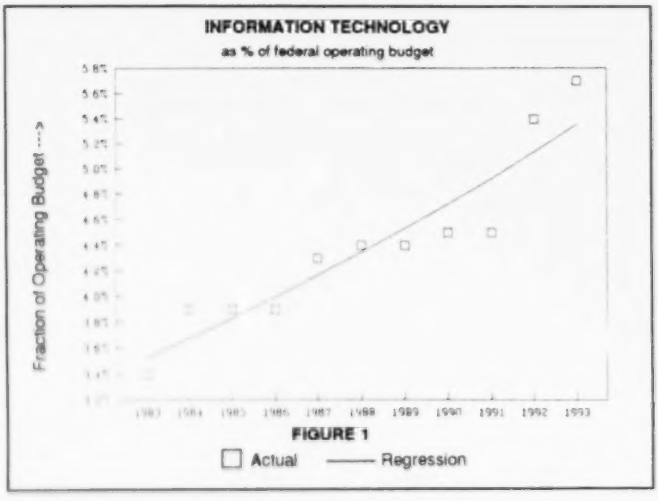
Often these data stores are developed primarily for the convenience of the individuals or organizational units that create them. However, data worth recording are also worth sharing. With traditional technologies the cost of locating and sharing information frequently exceeds that of recreating it or of doing without it. Electronic technologies shift the balance in favor of sharing and reusing data.

The information that government agencies develop can be likened both to the raw materials that commercial enterprises use and to the inventory of finished products they create. The ability to manage these assets and to achieve optimum return on them is an important determinant of the success of commercial ventures. By analogy, the success, or effectiveness, of government activities is strongly affected by the manner in which their information as sets, or resources, are

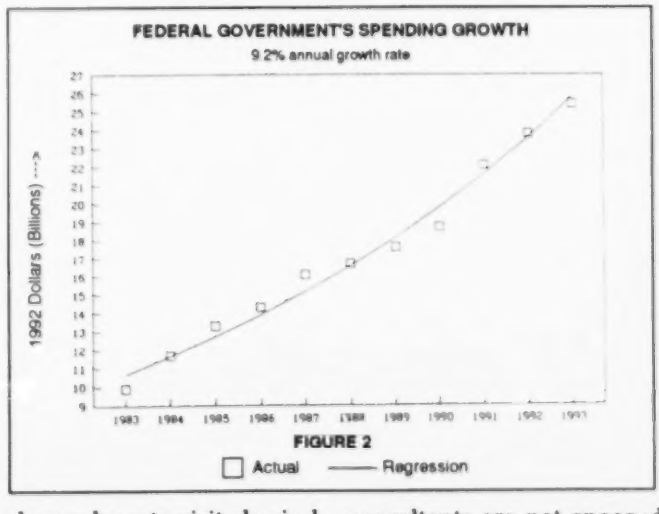
managed and exploited. The contribution this can make to more efficient and effective operation of Federal agencies can be readily demonstrated. Federal librarians, and information professionals, should not fail to seize opportunities to emphasize this and to articulate the roles they can-and do—play in extracting maximum utility from the government's inventory of information resources.

Librarians and Electronic Information Resources

Many individuals gain their first understanding of the utility of information technology from exposure to word processing or electronic spreadsheets, but comprehension of its true power and potential usually comes forcefully when they experience its ability instantaneously to retrieve specific information from very large remote or local data stores. For most people this happens with a library system. Thus, librarians in many organizations are beginning to establish their credibility as information management specialists. They need only to press that advantage and to avoid trivializing the considerable skills and abilities needed to use effectively the myriad of information resources that are readily available and accessible.


INFORMATION TECHNOLOGY
as % of federal operating budget
Fraction of Operating Budget ---->
1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993
Actual
Regression
FIGURE 1

Following two decades of effort librarians have developed and put at the disposal of their users systems that have enhanced the utility of library and information resources. Libraries now employ a variety of electronic facilities that make them easier to use, expand the scope and variety of information available to users, and permit access to that information at the time and place of a user's choosing. This same technological infrastructure reduces the need users have to visit physical places called libraries, or information centers. Electronic systems make an organization's library invisible, rendering it simultaneously nowhere and everywhere. They blur the distinction between formally assembled collections of information and data collected or generated as a by-product of activities in-progress. Reduced contact with physical libraries reduces the contact users have with librarians, possibly reducing the connections they make between in formation services and librarians. The facilities librarians and the information industry have put into place permit users access to an unprecedented variety and richness of information resources. But this richness and variety can be bewildering and even overwhelming, thus, magnifying the value and importance of expert assistance in exploiting those resources. The amount and kind of assistance individuals need varies: some only need general advice, while others may prefer to delegate the entire in formation access task to specialists.


FEDERAL GOVERNMENT'S SPENDING GROWTH
9.2% annual growth rate
1992 Dollars (Billions) ---->
1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993
Actual
Regression
FIGURE 2

With the diminished importance of physical libraries and reduced opportunities for contact between users and information professionals, the latter will increasingly need to reach out to their users and add value to the many services users have at their disposal. Consequently, librarians and information specialists will need to be flexible. They will need to function more like other professionals who provide specialized services to clients. They must be prepared to work closely with users as professional peers, or consultants, who bring special skills to bear on others' problems. In order to be effective, librarians must be pre pared to go beyond their particular specialty and intimately involve themselves in their clients' problems. This is what consultants in many fields do. For example, computer consultants are not engaged by businesses to solve computer problems, but rather to use their knowledge

of data processing to solve business problems; attorneys are not engaged to expound on jurisprudence, but to apply their knowledge of the law to solve or prevent problems for their clients; mechanical engineers are expected first to understand the purpose and design of buildings before applying their knowledge of strength of materials, thermodynamics, fluid mechanics, etc., to their design. Each of these professionals does two things: (1) they quickly learn the essential elements of new situations, and (2) they bring specialized knowledge and techniques to bear on those situations. Modern technologies are making it necessary for librarians to function in a similar manner. The result will be a more interesting, exciting and rewarding—albeit a more stressful— profession.

Librarians, particularly Federal librarians, will have numerous occasions to contribute to the solution of significant information problems that will arise out of myriad other activities. However, those engaged in these activities may not be aware of the contribution information can make to the solution of their immediate problems. They may also not be conscious of the gravity of developing information problems before they reach crisis proportions. Thus, librarians, and Federal librarians in particular, must be prepared to insinuate themselves into the activities of research and work teams.

Librarians need to master and apply the basic principles of marketing, and to disabuse themselves of the notion that marketing is synonymous with huckstering. Marketing consists of four elements, the last of which is promotion. They are generally practiced by most successful organizations and individuals that offer products or services to customers or clients. The basic activities include: (1) identifying the needs that potential users have, (2) determining one's ability to satisfy those needs, (3) tailoring services accordingly, and (4) promoting those services. Information professionals and librarians need to practice all four of these activities, in particular they need to practice the art of promoting themselves.

Libraries and Electronic Information

Information handling systems used to support future research efforts as well as the normal operations of many institutions will generate such prodigious quantities of data that only the agencies that produce or collect them can archive them. For example, in late 1991 NASA began a data collection project, *Mission to Planet Earth*, whose goal is to collect highly detailed information concerning this planet. When fully operational, a group of orbiting satellites will transmit to receiving stations on earth tens of thousands of billions of bytes, tens of terabytes of data, each day. It is estimated that the amount of data transmitted and collected each day will exceed the information content of the entire Library of Congress. There will no doubt be other, similar projects, begun in the near future that will also collect enormous quantities of data. Most government and academic researchers needing to use these data will need assistance to locate and use them.

The amount and variety of information of potential interest to researchers and people working on public programs is growing at an enormous rate. Little of this information will be held in local collections. It will be maintained in remote academic, commercial and Federal data stores from which it will be retrieved as needed. Knowing how to locate it, how to access it, how to determine its reliability, and how to exploit it, will be among the most valuable capabilities any Federal work group will have.

Librarianship and Bibliographic Control

Electronic information handling technologies have made libraries and information centers more interesting, exciting and effective for users and staff alike.

Even within the context of traditional libraries the roles of librarians have changed. The effect is most evident in cataloging departments. There is a decreasing need for individuals who have mastered and can apply cataloging rules. On the other hand, there is also an increasing need for individuals who can apply the principles of information organization, classification, and indexing. As computer systems with ever greater data storage and transmission capacities proliferate throughout organizations, there will be a growing need for individuals who can organize, make accessible and ensure the integrity of the resulting large stores of data. Nowhere is this more so than within the Federal government with its prodigious capability to create electronic information. The need is already evident. To cite a recent, dramatic example: In 1990 *The New York Times* published a story concerning the data archives of the NASA Jet Propulsion Laboratory (JPL). It said in part:

"Scientists seeking to mine the huge trove of data gathered at great risk and expense in 30 years of space flight have found that much of it is so badly labeled or stored that extracting useful information can require years of ingenious detective work.

> "... it can take ... researchers months and even years to pry useful information from the hundreds of thousands of magnetic tapes on which it is stored. Many ... are uncataloged. Some have been damaged by heat or floods."

This story may easily be repeated many times unless organizations begin to appreciate the importance of their information assets and take steps to ensure

their integrity and continued accessibility. This is not a traditional library problem. Nonetheless, individuals with the skills and abilities of librarians (i.e., individuals with an understanding of the need to create instruments to ensure future retrieval of individual items from large collections; knowledge of indexing, classification and catalog construction; sensitivity to the requirements for a hospitable environment for archival storage, etc.) would have developed programs that would have prevented the various aspects of the fore going problem.

Obviously, the problem of organizing and making accessible the data files and databases organizations generate in the normal course of doing business is not one that can be solved by shared cataloging systems, nor will general purpose classification and indexing systems prove adequate. Thus, demand will grow for people who can create and maintain systems specially suited to particular situations. On the other hand, some level of uniformity will be necessary across agencies and organizational units to facilitate information and resource sharing. The present methods for bibliographic control are very likely too ponderous to be practical for such a task. A simplified, flexible system will be needed. Thus, there is a need to develop an appropriate bibliographic control apparatus — or perhaps a *cybergraphic* control apparatus — to organize and make accessible the growing data stores that enterprises of all sorts are creating.

Collection Access

In the past librarians took comfort in the belief that for the foreseeable future existing print collections would continue to be more important than electronic sources in satisfying the in formation needs of library users. However, recent developments in electronic publishing, data communication, data storage and display technologies have altered the situation more radically and rapidly than we might have imagined.

Systems that permit electronic images of documents to be created, stored and transmitted are becoming increasingly common and their capabilities are steadily increasing while their costs are de creasing. Thus, even documents not in machine-readable form or that contain complex graphics can be accommodated in electronic information systems by converting them to digital images. The three national libraries have been leaders in developing applications that permit digital images of documents to be created, stored in computer databases and distributed electronically. For example: The National Agricultural Library and the University of North Carolina have demonstrated the viability of using data communication networks generally available to academic libraries and commercially available equipment and software to satisfy interlibrary loan requests with digital images of documents. They have also demonstrated that digital images of documents created to satisfy ILL requests can be retained in a data base to be used to satisfy future requests for the same item. In this way, in the course of time, the most-used documents will become available in electronic form.

Ironically, old, rare documents may shortly be more readily available in electronic form than new items. A number of programs have begun, or are planned, in which deteriorating documents are preserved as electronic images. For example, since the mid-1980s the National Library of Medicine, the National Agricultural Library and the Library of Congress have studied methods for converting documents to digital form for preservation. In 1984 the National Library of Medicine developed a prototype system for the electronic storage and retrieval of document images. In 1986 the National Agricultural Library began a project to test the feasibility of providing in-depth access to the literature of agriculture while also preserving it from deterioration by using scanning and character recognition technologies. In 1989, following its own long involvement with optical storage technologies, the Library of Congress initiated the American Memory Project, which includes the means to distribute digital images of some of the unique materials in the Library's collections. At present optical disks are used to distribute the image data, but plans have been announced eventually to deliver these data via telecommunications.

The last impediments to the wide-spread use of electronic imaging technology—extraordinary data storage and data transmission requirements—are rapidly falling. Ultra-high capacity magnetic and optical data storage devices are now generally available at moderate prices, e.g., 1 gigabyte disk storage devices are available for approximately $1,500. With the increasing use of optical fiber as a transmission medium, communication facilities with the capacity to move prodigious amounts of electronic data quickly are also generally available. Most developed countries have realized that a modern, effective communication infrastructure is essential for national well-being and international competitiveness. An example is passage of legislation, known as the *High Performance Computing Act*. By 1996 it will establish a one gigabit/second (i.e., 1 billion bits/second) NREN. At this speed one could transfer the information content of the entire encyclopedia Britannica in less than two seconds, high resolution images of nearly 250 large reference books in one minute, or the information content of a complete library collection of 25,000 volumes in five minutes. In addition, the telephone companies in this country are modernizing their physical plants with fiber optic and digital technologies. Most major telephone companies and telecommunications companies are studying ways

to make a variety of very high capacity communication services, such as Broadband ISDN, generally available. Such facilities, when fully implemented, will make possible a host of unprecedented information services.

Finally, an increasing number of local system vendors have announced image access capabilities for their systems, e.g., CARL, Carlyle, Geac, NOTIS, Sirsi, VTLS, etc.

Thus, the technologies exist, and are either already in place or shortly will be, to make possible virtual libraries. That is, electronic communication and computing networks that make it possible to retrieve information from wherever it may be maintained—from within organizations, from cooperating institutions or from commercial sources—and to combine disparate sources into new information.

Conclusion

The US government creates and maintains the largest traditional and electronic data store in the history of this planet. It has invested heavily in the technological infrastructure that can make those data accessible throughout the Federal bureaucracy and, hopefully, to the general public. Modern information handling technologies permit users to have an unprecedented richness of information wherever and whenever they need it, instead of requiring them to go to where the information is or to wait to gain access to it. These technologies have diminished, and will continue to diminish, the importance of physical collections of documents and physical libraries. On the other hand, they are also creating an increased need for the special skills and abilities of information professionals, and will permit them to make more direct contributions than in the past to the effective operation of the organizations that employ them.

The skills and cooperation of many individuals—administrators, computer and communications specialists, information specialists, and those who create and use government information—will be needed to exploit fully the government's formidable information resources. Leadership, guidance and an understanding of the potential, present capabilities and limitations of those resources will likewise be needed to realize the potential inherent in Federal information resources. Federal information professionals are in an excellent position to provide much of the needed leadership. However, they must be proactive. They must seek out opportunities to demonstrate how information resources and their own special skills can transform and improve the operation of the Federal bureaucracy. They must learn to function more like consulting information engineers than traditional, information resource custodians.

It is the responsibility of those of us in library education to help librarians and information specialists master a rich assortment of new, highly sophisticated tools, and to help them gain an increased appreciation of their roles in the information transfer process. But, it is up to all of us to communicate this to our various communities and to seek out and to welcome the challenges of using information in creative ways to satisfy user and organizational needs. ■

Notes

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6 Senator Albert Gore, Remarks on the NREN, *Educom Review*, 25 (Summer 1990), p. 13.

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8 Tracy M. Casorso, "The North Carolina State University Libraries and the National Agricultural Library joint project on transmission of digitized text: improving access to agricultural information," *Reference Services Review*, 19 (Spring 1991), p. 21.

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11 James H. Billington, "Library of Congress to open collections to local libraries in electronic form," *American Libraries*, 22 (September 1991), p. 706.

12 Loc cit.

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Government Information Policy and Administration in the Next Century: Is Nothing Sacred?

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The government information system is rapidly changing in all ways. For the immediate future, it will continue to undergo transmutation as the process of reinventing government is realized. One of the pledges brought to the presidency on January 20, 1993, by William Jefferson Clinton was "to radically change the way government operates-to shift from top-down bureaucracy to entrepreneurial government that empowers citizens and communities to change our country from the bottom up."[1] He took some actions in this regard shortly after the inauguration- regulating post employment lobbying activities by senior administration appointees, cutting administrative expenses, and eliminating 100,000 federal employee positions.

A more ambitious and potentially far-reaching effort at changing government was announced by President Clinton on March 3, 1993. He indicated he was initiating a national performance review to be conducted over the next six months by a task force to be headed by Vice President Albert Gore. "Our goal," said the President, "is to make the entire federal government both less expensive and more efficient, and to change the culture of our national bureaucracy away from complacency and entitlement toward initiative and empowerment. We intend to redesign, to reinvent, to reinvigorate the entire national government.[2]

Emphasizing the bipartisan nature of the undertaking, the President concluded that "it's time our government adjusted to the real world, tightened its belt, managed its affairs in the context of an economy that is information-based, rapidly changing, and puts a premium on speed and function and service, not rules and regulations."[3]

It is important that all of us understand the implications of this development for the government information system. Recall that during the presidential campaign, candidate Clinton proposed a "national information network to link every home, business, lab, classroom, and library by the year 2015."[4] After the inauguration, President Clinton indicated in his February 17, 1993 remarks before a joint session of the two houses of Congress that "high tech information systems" were very much part of his plans for infrastructure and community development.[5] His accompanying report, entitled A *Vision of Change for America*, called for new investments in information technology and revitalized use of such technology by federal agencies. Moreover, financing for launching "a broadband, interactive telecommunications network" was proffered: $54 million would be made available to the Department of Commerce in 1994 "for grants to States, local governments, universities, school systems, and nonprofits to link public facilities in such a network. Between 1995 and 1998, $150 million annually would be made available."[6]

A few days later, the President's plans for technology development revealed his intention to foster greater reliance by the federal government on information technology and electronic information systems "to improve the efficiency of its own operations."

"Information technology will be used to dramatically improve the way the federal government serves the people. Government will become more cost-effective, efficient, and 'user-friendly.' In particular, we will use technology to improve the quality and timeliness of service, to provide new ways for the public to communicate with their government, and to make government information available to the public in a timely and equitable manner."[7]

In this plan, the Clinton administration pledged to "undertake a careful review of government management with a view to making the most efficient possible use of now information technologies," a

commitment renewed in the subsequent March 3, 1993 announcement of the national performance review. "Many of the government's policies in such areas as privacy, information security, records management, information dissemination, and procurement will be updated," said the President's technology development report, "to take into account the rapid pace of technological change."[8] Certainly Congress will have a role in making such necessary policy changes.

This increased use of information technology, however, will present Congress with a wide variety of opportunities and options for reinventing government. Statutory policies concerning government information and procurement will be affected, but there will also be important administration and management considerations to address. In many cases, it may be necessary to redesign agencies from a customer or end user perspective. Large federal field staffs may no longer be needed for some programs, or may assume new importance as a force of technical troubleshooters assisting in several consolidated program areas.

New information technology applications may well necessitate substantial rethinking of the appropriate organizational structure, functions, and possibly even the missions of agencies. A new federalism may emerge, with the states or quasi-public entities being assigned responsibility to make Federal program administration adjustments or corrections when service or benefit delivery breaks down.

In addition, the pertinent government-wide management, coordination, and overseer roles of the Office of Management and Budget, the General Services Administration, the Government Printing Office, and the National Archives and Records Administration, among others, will probably require reassessment. The implications for the government information life-cycle duties of these entities alone are fascinating. The "guardian of the Nation's attic," the National Archives, might become a source of electronic information assigned to it by Federal agencies for public access over a national information network. The venerable Government Printing Office, for reasons of effecting economies, constitutional separation of powers considerations, and new technological developments, may be transformed into a congressional information agency responsible for producing, registering, and disseminating, only the information products and services of the House and Senate, or perhaps the entire legislative branch.

In the face of radical change, one often hears the exclamation found in the title of my remarks: Is nothing sacred? The short answer to this question is a definite "yes." In American government, we do have sacred elements. Perhaps the first among these is the sovereignty of the citizenry. When exercising their sovereign will a few months ago, the American people effected a change in the federal government, bringing new leaders to the White House, the departments and agencies, Congress, and, as we begin to see, even the courts. These new leaders have come with ideas for changing the programs and missions of government. In the case of President Clinton's efforts at so-called reinvention, profound changes of a magnitude not experienced since the arrival of the New Deal may result.

We came to this Forum to consider government's role in the electronic information era. Efforts are underway to fashion that role not merely in terms of government information policy, but also with a view to creating a revitalized model of governance to serve the people of this nation into the next century. Many of us will probably have an opportunity to contribute in some way to this new development. It presents a challenge that is exciting and, indeed, of vital importance to electronic information systems, to American government, and to the future of our country. ■

Notes

1. Bill Clinton and Al Gore. *Putting People First. How We Can All Change* America. New York, Times Books, 1992, p. 24.
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3. Ibid., pp. 3-4.
4. Bill Clinton and Al Gore. *Putting People First*, p. 10.
5. See *Weekly Compilation of Presidential Documents*, v. 29, February 22, 1993, pp- 217-218.
6. The White House. A *Vision of Change for* America. Washington, DC, February 17, 1993, p. 53.
7. The White House. *Technology for America's Economic Growth, A New Direction to Build Economic Strength*. Washington, DC February 22, 1993, p. 20.
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LIBRARY OF CONGRESS
THIS